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ORIGINAL ARTICLES.

THE BACTERIAL CONTENT OF THE RAILWAY COACH.[1]

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DURING the year of 1896, while the writer was in charge of the Hygienic Laboratory of the Marine Hospital Service, certain experiments were made with a view of determining the value of formaldehyde gas as a disinfecting agent for the railway coach. Results were soon so promising that it was determined to make a thorough trial of this agent in a practical way to see whether it could not supplant the methods then in vogue, as these were far from being satisfactory, these methods always resulting in damaging or destroying the interior of the coach so that a complete overhauling and refurnishing was the rule. This was, of course, a very expensive procedure, and it was to be expected that the railway companies would oppose such disinfection. As a result disinfection was not resorted to as often as it would have been otherwise.

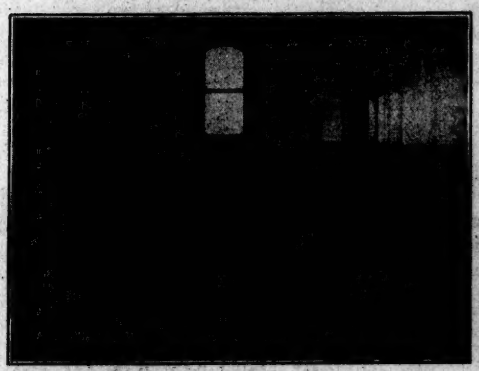
The above inquiry naturally led to an examination of the bacterial content of the railway coach. Accordingly communications were sent to the several railway companies whose lines centered in Washington, and subsequently to other lines, requesting their cooperation and assistance covering these points. All facilities for these examinations were freely granted, not only at Washington, but at many other places as well.

In view of the fact that it was a growing belief that the railway coach was one of the chief agencies in disseminating tuberculosis, it was deemed advisable to make this the prominent feature of the inquiry, and determine this first as a preliminary to a more comprehensive study. When this investigation was begun it was the intention to continue the observations over a sufficient length of time in order to include as many of the conditions as possible which affect the sanitary condition of the passenger traffic, but many lapses occurred which were unavoidable. These were chiefly due to other official duties, and on account of this many of the samples collected were not examined. These should have been included so as to make the report more complete. These unavoidable interruptions also caused the inquiry to be continued over a longer period than would have been otherwise, but notwithstanding these, it is believed that the observations so far as made are fairly representative of the sanitary conditions found in the railway coach at the time the examinations were made.

The examination included: (1) The bacterial content of dust from carpets; (2) the bacteria obtained from the interior furnishing of the coach; (3) the bacterial content of the air of the coach; (4) the bacteria of the drinking cup; (5) methods of cleansing the railway coach; (6) observations on the health of employees.

Bacterial Content of Carpet Dust.—Samples of dust from the carpets were collected usually at the cleaning stations where they were removed from the cars for the purpose of cleaning. In a few instances dust was collected from the carpet in the coach just after sweeping. The method of collecting such samples was as follows: A special apparatus with an anemometer attached was placed in the car or room near to where the carpet was either being swept or cleansed by

Fig. 1.



Showing apparatus arranged for collecting dust from carpets, etc., in the interior of car.

beating or compressed air, a certain number of cubic feet of such dust-laden air was aspirated through the apparatus, so that the dust was caught on sterilized glass wool, in such an apparatus as is shown (Fig. 1). This was then placed in a sterile container, taken to the laboratory for examination. The amount of air aspirated through the sterilized glass wool was on an average of 200 cubic feet. Some of these naturally contained more dust than others, depending upon the filthiness of the carpet. Most of these samples were collected at the terminal stations because of the superior facilities existing there for collecting them. Seven samples of such dust were collected from November, 1896, to February 28, 1898. All of these were from Pullman cars. Three of these had just returned from a trip to the South, one from Tampa, Fla.; one from Jacksonville, Fla.; one from Nashville,

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Tenn. (via Asheville); one from Cincinnati, Ohio; one from St. Louis, Mo., and two from Buffalo, N. Y.

As soon as possible after collection, the containers containing the samples of dust were treated with a given amount of sterilized water, and a suspension of the dust obtained. This was centrifugalized for five minutes to remove the larger particles of coal dust, sand, etc., and then afterward again centrifugalized for sedimenting the finer particles for a microscopical examination and for animal inoculations. The microscopical examination made of the dust of these samples showed a variety of substances; particles of coal, sand, vegetable fiber, epithelial cells, yeasts, molds, bacilli and cocci. Five c.c. to 10 c.c. of this precipitate was injected subcutaneously in the axilla of guinea-pigs. Two pigs were used for each experiment. A careful examination of many stained specimens from each sample for the tubercle bacillus was always negative. The number of bacteria per cubic foot ranged from 2,800 to 20,000 and over. These were of many varieties, but principally those observed in the air. Only a few pathogenic forms were encountered: the pneumococcus, *Staphylococcus pyogenes aureus,* streptococcus and the colon bacillus. Only the pneumococcus thus isolated was pathogenic, and this slightly so.

The results of the animal inoculations for these samples of dust, were as follows:

Sample from car 1, caused a pneumococcal infection.

Sample from car 2, one pig died of an acute abscess, from which the staphylococcus was isolated; the other pig was dead at the end of two months from a progressive emaciation, negative.

Sample from car 3, caused a staphylococcal infection.

Sample from car 4, negative at the end of four months. Animals gained in weight.

Sample from car 5, one pig dead from a septicemia at the end of two months (probably an intercurrent infection).

Sample from car 6, negative at the end of six months.

Sample from car 7, caused an acute staphylococcal infection in one animal, another negative after seven months.

Dust from the Interior Surfaces of the Railway Coach.—Samples of dust and other material were collected from the surfaces of the seats, bedding, curtains and woodwork by means of a swab. This swab was made of absorbent cotton firmly attached to a stiff bronze wire, and moistened with a 5 per cent. solution of glycerin, placed in a large test tube and sterilized just before being used. These swabs were rubbed over the surfaces of the seats, woodwork, bedding, etc., where it was thought possible for the tubercle bacillus to have lodged. Not less than 15 square feet was thus treated, usually as much as that contained in a section of the sleeping car, was the rule.

Samples were examined at the laboratory as soon as possible after collection. The methods employed were, each swab was transferred to a flask containing 100 c.c. of sterilized distilled water and allowed to soak therein for several hours, being occasionally agitated, after which the water was expressed and the resulting suspension centrifugalized, the sediment collected for microscopical examination and for animal inoculations.

A microscopical examination of these samples showed them to contain various bacteria, epithelial and pus cells, coal, sand, vegetable fiber, hair and feathers. Numerous specimens from samples were also stained and examined for the tubercle bacillus, and in two instances bacilli resembling morphologically and tinctorially the tubercle bacillus. There seemed to be but little doubt as to these being tubercle bacilli because they were not decolorized by strong nitric acid and alcohol, although this was not verified by animal inoculations.

Thirty-four railway coaches were examined in this manner, 29 Pullman sleeping cars, 3 day coaches, and 2 smoking cars. These cars were not confined to any one part of the country, but comprised those used on roads from New York to Tampa, Florida, North to South, and West as far as the Mississippi. Eleven of these were running to health resorts and places frequented by tuberculous patients. The examination of these were made at times when the travel to these places was at its height, and when to the writer's personal knowledge many cases of undoubted tuberculosis were occupying them.

Sixty-four animal inoculations were made from all these specimens with the result of positively identifying the tubercle bacillus only in one instance. It was thought to be present in one other, but this could not be confirmed by subinoculations in other animals. The pneumococcus was found in 5 instances, pyogenic streptococcus in 2, the staphylococcus in 2, colon bacillus in 2, hemorrhagic septicemia in 6, malignant edema in 1, streptothrix in 1, diphtheria bacillus in 1; the remaining 43 examined were negative and no pathogenic organisms were encountered.

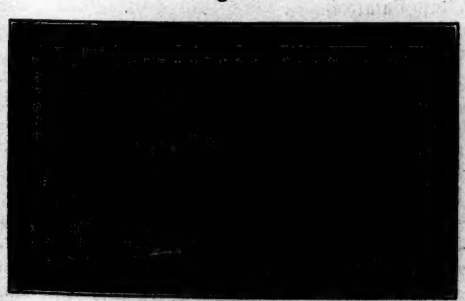
With regard to the one instance in which the tubercle bacilli was positively identified by subinoculations into other animals, this was a car which had run between Jersey City and Charleston, S. C. Its history was to the effect that many cases of tuberculosis had been carried to the southern health resorts on prior occasions, but none so far as could be ascertained were carried on this particular trip immediately after which the dust was collected. The other case, in which there is a doubt, came direct from Tampa, Fla., being returned empty to Jersey City as a "deadhead." No further history was obtainable. An inspection showed what appeared to be several spots of inspissated sputum on the cushion and on the carpet, about where the cuspidors are

usually placed. A microscopical examination made of these spots showed it to be sputum, but no tubercle bacilli could be identified. The animal inoculations made with the precipitate from this dust killed a guinea pig within 2½ months. On section there was found a small or circumscribed abscess in the axilla where the injection had been given, which to all appearances was tuberculous. Direct examinations made of the pus and histological examination showed bacilli, which in their morphology and tinctorial properties were identical with those of the tubercle bacillus. Careful examination made of all the organs for tubercles was negative. Subinoculations made with the tissue and pus from the abscess did not cause tuberculous lesions. Possibly this may have been tuberculosis, or on the other hand, it may have been one of the acid-fast bacilli, which possesses little or no pathogenesis. Yet their behavior to nitric acid and alcohol was identical with the controls made with cultures of the tubercle bacillus.

Bacteria in Air of Coach.—Pathogenic bacteria floating in the air is relatively of greater importance in disseminating disease than those fixed in the cushions, bedding, etc. It was first attempted to determine what relation the pathogenic varieties bore to the whole number present in a given amount of air, and then afterward what was the ratio between the number and that of passengers. The data obtained was not of such a character to be of any value in determining this on account of the many factors entering into the ventilation of the coach in transit.

Dust from the air was collected by means of a special apparatus (Figs. 1 and 2) by which the air could be aspirated from the coach when in motion.

Fig. 2.

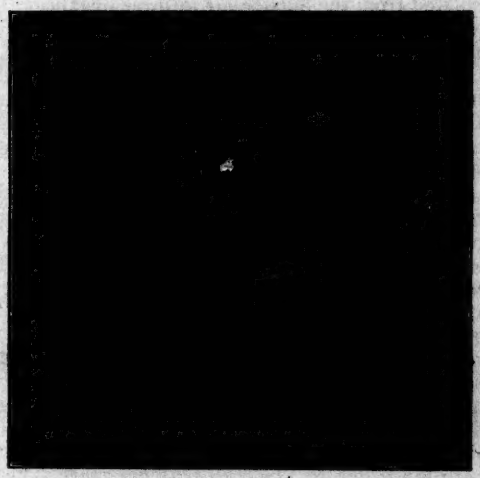


Showing apparatus placed in position in car window for collecting dust.

The apparatus was placed whenever possible in one of the windows in the rear of the car, and varying amounts of air aspirated through it. The dust and bacteria were caught on sterilized glass wool contained in metal cylinders, the same as for collecting dust from carpets. Dust from 48 coaches was collected, and this was taken to the laboratory and examined.

The amount aspirated from each varied from 1,500 to 7,200 cubic feet. Twenty-seven of these were on runs to or from places in the South, where tuberculous cases go and one to Colorado Springs. The number of passengers was noted so far as was possible during the time of the collection of the samples. The number varied greatly. In some instances only two or three, while in others it was 24. The number, however, does not give an adequate idea of the total number occupying a coach during its trip. This is particularly so in coaches running between New York and the Southern cities, where it is not unusual to observe the greater part of coach population change two or three times before the end of the journey, only a small proportion being through passengers. It was also attempted to obtain information from the Pullman conductors, relative to the number of persons using such coaches during its whole trip, but on account of the unsatisfactory and fragmentary character of this data, it was not of sufficient value to be included. There were observed in the coaches under examination many cases of undoubted tuberculosis, and not a few of these were evidently suffering from the disease in its excavatory stage.

Fig. 3.



Showing aspirating device outside of car window.

Microscopical examination of the sediment obtained after centrifugalizing the watery suspension of the dust revealed particles of coal, sand, vegetable fiber, wool, cotton, epithelial and pus cells, yeasts, bacilli and cocci. A careful search made for the tubercle bacillus was negative in all instances. Plate cultivations made from several samples demonstrated the number of bacteria of each cubic foot of air ranged from 225 to 5,200; the number did not appear to bear any definite relation to the amount of dust, nor to the number of passengers. The colonies developing on these plate cultivations were those of yeasts, molds, streptothrix sarcinæ, micrococci

and bacilli. The pneumococcus, streptococcus, *Staphylococcus pyogenes aureus*, the colon bacillus and of hemorrhagic septicemia were isolated and studied.

The majority of the bacteria found in the air evidently had their origin, as would naturally be expected, from the outside air. Control experiments were made on several occasions contemporaneously with those made with car air, demonstrated the bacteria to be the same, with the exception that no pathogenic varieties were encountered, save the colon bacillus, which was isolated from the outside air in three instances; in two of these tests it was also isolated in the air of the car.

Ninety-six animal inoculations were made from these which gave the following results: Tuberculosis 1, pneumococcus infection 8, staphylococcus infection 4, general septicemia 5, malignant edema 1, negative 76.

The sample of dust which caused tuberculosis was collected from a Pullman car which ran between Tampa and Jersey City. It left New York on June 19, having an average of 10 passengers *en route*. The car was said to have been cleaned at Tampa. On its return trip it had 8 passengers from Tampa to Washington. The car was very dusty. 2,112 cubic feet of air was aspirated between Washington and Jersey City. A guinea-pig inoculated with a suspension of dust from this car was dead in four weeks after inoculation. Post-mortem examination showed pneumonia of both lungs due to *Streptococcus pyogenes*. There was also a caseous gland, somewhat enlarged, in the right axilla, at the point of inoculation, which contained bacilla resembling that of tubercle. The histological character was typical. This gland was emulsified and injected into other pigs. One of these died in four weeks after inoculation, and on section showed enlarged gland in the axilla which was caseous and contained tubercle bacilli. The retroperitoneal glands were enlarged and cheesy. Miliary tubercles were found in the spleen and liver.

The greatest number of pneumococcal infections from the air was obtained from the smoking cars. The air from the day coaches was negative in every instance. Observations of a similar character were also made on 39 other coaches which are not included in this report because of accidents either happening to the samples at or soon after their collection, or the time intervening between their collection and examination being so long as to vitiate their value, so these were omitted.

Bacteria of the Drinking Cup.—A bacteriological examination of 21 specimens obtained from the drinking cup of a Pullman coach demonstrated the pneumococcus 1, streptococcus 1, pyogenic staphylococcus aureus 1 and diphtheria bacillus 1. The pneumococcus was only slightly pathogenic, the streptococcus and and staphylococcus not at all, but the diphtheria bacillus caused the death of a 300 gram guinea-pig in less than four days. Subcultrues were recovered from the animal and made the subject of further study. While the number of pathogenic organisms isolated from the drinking cup is not large it is evident that it is one of the means of disseminating disease. It is suggested that some other arrangement should be made by which individual drinking cups at a small cost could be supplied in each car.

Method of Cleaning Passenger Coaches.—The methods vary considerably according to the time and place in Jersey City, where perhaps the largest number of cars are cleaned, the methods in vogue at the time of making these observations, were essential, as follows: (1) The carpets were removed by rolling them in bundles, and then taken to the cleaning shed. (2) The seats, cushions, pillows, mattresses and blankets were removed to a shed alongside the car, where they were beaten, dusted and aired; (3) men go through the car and dust all portions, including the upper berths, with feather dusters, immediately after which the upper berths are closed; (4) the charwomen wash the woodwork and glass with lukewarm water and castile soap.

The carpets after being taken to the cleaning shed, were placed on an elevation, which was covered with a heavy wire of about 6-inch mesh. These were then beaten with the ordinary carpet duster. Quite a number of the carpets, however, were cleaned by means of an air blast, the carpets being laid flat upon the floor and the apparatus conveying the blast of air passing over them. This seemed to take out the greater portion of dust, and was superior to the hand beating process. The rugs, particularly those of the smoking compartments, were, if badly soiled, washed with soap and water and then dried. After the carpets were thus treated they were replaced; the mattresses, pillows and bedding following.

The cars cleaned in Washington and Jersey City were treated in this way every other trip, being only swept at the end of each run. Those from Chicago, St. Louis, Jacksonville, Atlanta, Birmingham, Ala., and New Orleans, were cleaned every round trip.

The dusting of the bedding was done alongside the car. Many times this was done fairly well, but at many other times, particularly late in the afternoon or when the weather was damp or raining, they were not cleaned as well as they might be.

The same method was practised in Philadelphia, Washington, Chattanooga, Tenn., Asheville, N. C., and Jacksonville, Fla. (With regard to these latter it was usually done in the open air, the carpets being removed to a wire-covered rack and beaten; while the mattresses, bedding, curtains, etc., were taken out, shaken, sometimes beaten and usually exposed to the bright

sunlight for several hours. Strange as it may seem, the bacterial content of the bedding and carpets treated in this manner gave fewer bacteria than those in the car yards of Jersey City.

Compressed air was not in use at Jacksonville, nor at many places in the South. The objection urged against the use of compressed air at this place was that it seemed to cut out the pyle of the plush very much more rapidly than the process of hand beating, as there was so much sand always in these cars.

At St. Louis, Mo., the cleansing by the air blast had just been introduced. The car and its contents, with the exception of the carpets, was cleaned in rather a crude manner, too much confidence being placed in the air blast, and too little attention paid to the method of application. For example, attempts at dusting these cars were made by throwing a blast of air into the car with all windows and ventilators closed. This only resulted in setting free a cloud of dust, which afterward settled on the woodwork and cushions, which were not to be removed, except by a slight dusting.

The day coaches, particularly those of the Pennsylvania and Southern Railway companies, were cleaned far better than those of the Pullman Company, at least the examination of the dust after such cleaning showed a fewer number of bacteria than was always found in the Pullman coach.

The application of the air blast appears to be the best suited for this work. With due care in its application a greater amount of the dust from a car can be removed.

Health of Railway Employees.—In view of the fact that there seems to be a relation existing between the quantity of dust in the coach and septicemia produced by it in animals, and more particularly so with regard to the pneumococcus, a short notice regarding the health of the employees engaged in the cleansing and renovating these coaches would not be out of the way.

This was inquired into rather extensively at the car-cleaning sheds in Jersey City, where the major portion of the coaches east of the Misissippi are cleaned. Also inquiries of this character were made at Washington, Asheville, N. C., Chattanooga, Tenn., Jacksonville, Fla., Kansas City and St. Louis, Mo.

Many persons engaged in this employment are what might be called "transients," only taking service for a short time, or at irregular intervals. Little or no information could be obtained from those in charge of the work, about the health of these individuals, although none could recall an instance where any of these were "laid off" for any length of time on account of illness, and no history could be obtained with regard to them having been ill with cough or "lung fever."

There were, however, a respectable number of employees who had been constantly engaged in cleaning these coaches for a number of years. Three in the carpet-cleaning room, where nearly, if not all, of the carpets are cleaned by the hand-beating process, or by compressed air. Two had been engaged in this work for five and three years respectively, and another two years. All were present and at work at the time of inquiry and were to all appearances in good health. None had been sick, save with an occasional cold, which did not stop them from working for more than a week. No precautions of any character whatsoever were observed by those employees while engaged in work of this character. The room was constantly surcharged with dust and faces were blackened with it, but notwithstanding this they seemed to suffer no discomfort. Possibly these persons may have become immune(?).

No history of illness of any kind, suggestive of lung affection, could be obtained from the scrubbers, or those who engaged in beating and dusting cushions and bedding. The conductors and porters of these Pullman coaches were an exceedingly healthy lot. No one who was interviewed gave history of tuberculosis. Statements were made by these, however, that they knew of certain of their former number who had become ill from consumption, making it necessary for them to leave the service. Only three reports of this character, however, were obtained. Another instance of this kind came under the writer's observation, and that was a porter on a Western road.

As there seems to be a growing fear of tuberculosis among this class, and I have noticed, even at the time when these observations were made, and subsequently thereto, that a great deal of care was exercised by them in keeping the cars in good condition, particularly so if tuberculosis patients were passengers.

Ventilation of Coaches.—A number of anemometer readings were made for the purpose of determining the ventilation of these coaches. These were made in the top of the car, near the ventilators in the coach, on a level with the top of seats and also upon the floor. The data obtained was very unsatisfactory, and many times contradictory. Sometimes it would appear that the amount of air rushing out of the car was sufficient to change the whole content within a few minutes; at other times there appeared to be little or no ventilation, and particularly was this so on the level with the top of the seats. Here there was more or less movement of the air, due to the opening of the ventilators, windows and the doors.

After making quite a number of observations of this character, the writer became convinced that they would be of little value in determining this point, consequently they were abandoned. It then occurred to us to use some volatile substance, like ether, containing a volatile odor, and by spraying this at a given time in the for-

ward part of the car when the train was in motion, and then determine at what time the odor could be detected; this was done under many conditions. This test is admitted to be very crude, but it gave some idea of the ingress and exit of air. The shortest time in which the odor disappeared was seventeen minutes, all ventilators on one side open, also two windows partly open; the longest time was thirty-five minutes, three ventilators open. The interchange of air was many times greater in the upper third; here the odor was not appreciable after five or ten minutes.

Check observations were made by observing the time when a car became free from smoke, when suddenly filled, as for example after passing through a tunnel. This confirmed very closely to those made with volatile scents. Bisulphide of carbon also suggested itself as being an agent par excellence, but it was deemed advisable to employ it after an unexpected experience one night in Western Kansas. The writer was one of twenty occupants of a Pullman sleeping car. All the lower berths, and a few of the upper, were occupied. Four ventilators were slightly open. Just as the train was backing off from a siding, it came in contact, or in close proximity to a skunk. The air of the car was immediately surcharged with a most noisome odor. Everybody began to cough and ring for the porter, with frantic appeals to open doors, windows and ventilators. This was done as fast as circumstances would allow, but notwithstanding this it was at least thirty-five minutes afterward before order was obtained, but the odor did not disappear for an hour. On the following morning an examination showed that the truck on the rear car, the one just back of the one occupied, still smelled strongly of the odoriferous principle of the skunk, so it is safe to say that some of the outside air being surcharged with the odor was carried into the car and remained there at least an hour, if not longer.

Quite a number of improvements have been recently made in the ventilation of the railway coach, but it is yet far from being satisfactory. Particularly so with regard to the Pullman sleeping car. One of the most notable improvements in the ventilation of the passenger coach is the system now in use of the Pennsylvania Railroad Company, but it only applies to its day coaches. This system as devised is believed to be as nearly perfect as it can be made, without resorting to a mechanical forced draught. Unfortunately, this system as good as it appears to be for the day coach has not been considered practical for the ventilation of the Pullman car, in fact, it is doubted whether it could be applied, unless the interior of such coaches would undergo a complete rearrangement.

Perhaps a clearer idea may be conveyed in the following summary of the results of the animal experiments:

	Carpet dust.	Swabs.	Air.	Drinking Cup.
Negative,	8	43	76	17
Pneumococcus,	2	5	8	1
Staphylococcus pyogenes aureus,	3	2	4	1
Streptococcus pyogenes,		2	1	1
Bacillus tuberculosis,		1(?)	1	
Streptothrix,		1		
Colon infection,		2		
Diphtheria,		1		1
Septicemia,	1	6	5	5
Malignant edema,		1	1	
	14	64	96	21

Of the 196 animals inoculated with suspensions of dust obtained from the carpets, surfaces of the cars and from the air of cars it will be seen that 73 per cent., or 144 of these were negative. The largest number were those inoculated with dust from the air. Including those in which the tuoercle bacillus was positively identified there remains 21 per cent. of the animals which died of affections other than tuberculosis. Possibly there were some animals included in this number, which may have died of tuberculosis, or of diphtheria, but were killed by a rapic infection. If this is so, the percentage for tuberculosis and diphtheria may be increased. In view of the fact that a considerable number of the animals died very early after inoculatioe many more such experiments must, therefore, be made before we can arrive at a final conclusion.

The above observations and experiments are submitted for whatever value they may be in adding to our knowledge of the sanitary status of the railway coach. There is no desire on the part of the writer to draw any hard and fast conclusion from the above experiments, for he believes that the data herein submitted is not sufficient to warrant this. Therefore, many other questions regarding the sanitary condition of the railway coach must be solved before its actual condition is known. The only fact which seems to have been proven in this investigation that as much as 73 per cent. of the animals inoculated were negative, thus demonstrating that the bacterial content of the railway coach in the majority of instances examined was not infectious to animals.

The writer wished to continue this investigation in order to cover these lapses, and representations were made at the time when these observations were suddenly brought to a standstill, that the inquiry should be continued much further before sufficient data was collected to settle these points, but he was informed that the investigations had advanced sufficiently to show the conditions of the railway coach, and it was not deemed advisable or expedient for him to pursue the subject further. Notwithstanding this adverse action it was the intention of the writer to continue this at some future time, but so far this opportunity has not presented itself.

It is to be sincerely hoped that these few experiments and observations, few and fragmentary in their nature, will serve as a stimulus for further investigations in this important subject, and that proper authorities, either state or national, preferably the latter, will take up this work on this or other lines and furnish the much-needed information. Probably this may be done, as I am credibly informed that the Public Health and Marine Hospital Service now considers some further investigations are necessary to be made regarding the sanitary condition of the railway coach. The writer hopes that this is true.

In closing acknowledgments are made to the various railway officials for the many courtesies and cooperations the writer has received from them, to the Pennsylvania Railroad Company, the Southern Railway and the Pullman Car Company, to whom special acknowledgments are due, and also to my colleague, Dr. Ezra K. Sprague, late Assistant Director of the Hygienic Laboratory, who assisted me in this work.

THE CURE OF LEPROSY.[1]

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"And the leper in whom the plague is, his clothes shall be rent, and his head bare, and he shall put a covering upon his upper lip and shall cry "Unclean, unclean." All his days wherein the plague shall be in him, he shall be defiled; he is unclean. He shall dwell alone; without the camp shall his habitation be." (Leviticus, xiii: 44.)

WHEREVER, in historic reference, levitical guidance, holy appeal, or in divine interference, remark of leprosy has been made, the leper has been indicated as a morbid element in the field, and in Mosaic, Talmudic of Mohammedan law the victim of the disease was always classed among the living dead.

Small wonder that the humanitarian evolution in centuries of material progress should have cast aside even the slightest attempt at remedying more than the evil of the existence of the disease; and that this should have been only arrived at through the crudest and most barbaric methods.

Here and there in the modern world some desultory charge was taken of leprosy, at times directed at the care of the afflicted, but more for the protection of the public. Wherever, however, a leper came into existence, there was hardly more than a casual interest excited, or a bit of passing pity for the immolated.

So long as the epochal story of leprosy is told, and so long as the world finds time to listen to the dramatic theme, the name of the Belgian martyr priest, J. Damien de Vuester, must ring out in no uncertain tones. He was called by an inspiration to a solemn duty, which he fulfilled so well that with the word "leprosy" to-day the name of Father Damien sounds an echo. Unconsciously he worked out the signal which the time demanded: First, the world needed to be aroused to the conditions, and second, that only by his trying the hope of the leper might be awakened to a thought of better things amid the chaotic inaninity of their state of neglect and abhorrence at the hands of the rest of mankind.

With Father Damien's death in 1889, the thought of leprosy was spread throughout the world. The public prints heralded the exit of the priest and noted what had been done by him. The genesis of modern views of the disease so far as its care and treatment are concerned date from this time.

The British government in 1890 and 1891 located a qualified commission in India to investigate the disease. The death of Damien, as a statement in the introduction to the report of this commission affirms, was responsible for this step. "His martyrdom did not appeal in vain to humanity." The report of this commission was widely disseminated and excited a similar study of leprosy wherever the disease was found. Desultory reports followed, until the interest of the whole world centered and was crystallized in the Berlin Leprosy Conference in 1897.

A large opportunity of research was opened up. Even those living in leper centers differed as to the method of spread of the disease. When the real purposes of the aggregation of nearly two hundred men appeared, the mighty step forward began to show itself. That gathering lifted the whole atmosphere of leprosy out of the beclouded bigotry of uncharitable medievalism into the broad light of a humanitarian civilization. More than that, it demonstrated the need of considering leprosy as a combatible evil, and it approached, with stern argument and pure wisdom and reason, the avenues leading not only to the control of the disease, its future prevention, but even the probable cure of the fell malady.

Among the facts deduced were the actual numerical occurrence of the disease; the hardihood of many observers in their patient pathological investigations, resulting in the demonstration of the germs in every organ of the body, the measures already in vogue in many countries, the absolute denial of heredity in the etiology of the disease, and a better argument for contagion as the cause.

More than this; sufficient argument was brought to bear to make it almost certain that the channel of entrance of the contagion was through the mouth and nose. Since 1897, the work has gone on. Enlightened care of the disease is now practised the world over.

The ignorance of the profession with regard to the disease, the general indifference of the public and the fear of the leper himself have all

[1] Read before the Texas State Medical Association, Houston, April 27, 1905.

helped to prevent a better care or a better knowledge of this disease.

Popular conceptions of leprosy have been entirely derived from scriptural interpretations. Graphic as it is, the impressionist picture which Lew Wallace presents in "Ben Hur" is far from the actual state of the leper. Mosaic law defined the disease and classified types which to-day we know to be different diseases, some of them not leprosy at all. The "white scaling leprosy," the "leprosy of open sores," were the one a mild innocuous skin disease, the other only the common "seven years' itch." True leprosy is described in the Bible, however, and sufficiently so to have led to its more exact study.

To-day the exact types of the disease are known and recognized. In older countries, as in the Orient, Norway and Sweden and in China and India, where the disease has existed indefinitely, the phases of leprosy vary from insignificant markings of the disease to horrible mutilations, so transforming the person afflicted as to remove all semblance to a human form. We recognize, however, leprosy as a distinct disease, capable of exact study and determinable at the slightest evidence.

There are two general forms, that of nerve type and that of skin leprosy, both starting alike but varying as the symptoms develop. The picture of nerve leprosy is that which is the more appalling; that of skin leprosy the more horrible.

Nerve leprosy begins with small warning, flashes of eruption here and there, spots of reddish brown which come and go, small blisters on the hands and feet which either superficially form and dry leaving slight marks behind, or which leave ulcers, growing deeper and deeper until a part of a finger or a toe dries up or falls off leaving the stub behind. Sometimes there is only a loss of power in the member. The victim of the disease drops things, feels numbness of the fingers, burns himself without knowing it. Then there is contraction until the hand becomes a claw, the muscles atrophy and the flesh shrinks away, leaving only the skin and bone. Not only fingers but even the muscles of the face may do the same; the hair falls and staring eyes look out of a hairless face; the skin grows wrinkled, dry and then over bones a thinned and parchment skin covers what was once a rotund visage. The ears lose tone and hang like bits of pendulous leather on the sides of the head; meantime the gums recede, the muscles of the throat become affected, the voice first changes to a metallic note and then drops to a raucous whisper. Ulcers come on the hands and feet, and then God is merciful, the leper loses the balance of his brain control and drivels as an idiot or passes into a paretic state, softening of the brain, and he dies forgetful of the way in which the grim destroyer has snatched the brand from him, with eyes blinded and his senses stunned or bereft of the reasoning power.

Skin leprosy is more patent. Thickening in reddish patches usually, on the face and hands, as well as other parts; the skin grows tense, masking the face and giving to a skin of normal shape a fixed and tanned hue. Here, too, the hair falls, and the expression is that of a satyr, lips thickened, eyelids dense, and eyes glassy and staring in the leprous change. Here and there the masses of flesh rise above the skin forming nodose areas, some small, some large. At times these lumps, really tubercles, come fresh, in twos and threes, massing around the nose, on the ears, on the lips, and on the hands; they grow to the size of acorns, deep red and brown in color. Then they run together forming alternate nodose bands and deep depressions, almost like a perpetual smile, were it not for the fact that the everted lips and glistening teeth make the grin that of a fury. Once these bumps or tubercles reach their maximum in size, scabs start, the color becomes a deeper brown and the expression grows truly leonine, except that the eyes are furtive—staring as if in perpetual night. The voice sounds a note of nasal tone—at the same time raucous as if a high nasal note were interrupted by the filing of a saw.

How far we have come from those days when the leper found his only treatment in a sought-for surcease in the cities of the living dead; from that time when on his lip he bore the leathern thong which named him, even before he cried, "unclean, unclean." Carry the picture of the leper scourged with thorny brush until his bleeding sides begged pity or else the means to end his unwelcome life. Farther along let's draw the picture of the native of the Fijis wrapped in shrub and herb and laid upon a pyre, his blistering limbs yielding either to the loss of flesh or else giving way to death in the hope of survival. Among the South Americans even to-day the lepra victim submits his life to the bite of venomous reptiles in the hope that by this means he may recover, and, if not, that he may succumb in the process, rather than spend his life in exile.

To-day in India, Hawaii, Japan, the British Colonies, in Russia and in almost every civilized country in the world, fairly decent habitations have been provided, and in some even proper domestic and medical care. More than this, the treatment of the disease has been lifted from barbaric custom into scientific practice, and in almost every therapeutic field, serum, medicinal and hygienic, treatment has been essayed to ameliorate, and even in the hope of cure. No longer is the leper set aside to end his days in watching members, one by one, to fall away; he realizes that intelligent direction has mapped the road which leads no matter by how many turns to a possible relief. Empiricism and exact laboratory experimentations have added much to the knowledge of the treatment of this disease, and to-day we have arrived at the conclusion that here, as in any other field of nature, the combat is between the morbid and the true.

I believe leprosy is curable. I believe leprosy is curable as I believe syphilis is curable and as I believe tuberculosis is curable. There are cases of all three diseases which are only arrested and others which do not respond to any treatment and which destroy the patient in their processes.

Twenty-five years ago the victim of tuberculosis was condemned to die of the disease and the way was made easy for him. Syphilis, even to-day, is looked upon as incurable by the conservative, and yet both of these diseases, like leprosy, are self-limited diseases. According to the degree of original infection, according to the condition of body resistance and stability, of the victim of the disease, any of these three diseases will run a limited course, get well of themselves, or, under conditions of life favoring a higher degree of resistance, the disease is arrested after a time. With added care and treatment, with measures directed at increasing the resistance, this may be raised to a point where the disease can no longer hold its place in the economy and the patient recovers from the disease sufficiently to be free of all evidences during the rest of his life.

Applied to syphilis, applied to tuberculosis, applied to any disease of infective type, the patient is called well of a disease when that disease presents no evidences of its direct or indirect effects after a reasonable time. With syphilis the control of all symptoms, and the failure of appearance of others, after a careful treatment, allows the acknowledgment of a cure sufficiently for the person with such an experience to engage in matrimony and to beget or bear healthy children. The freedom of all physical signs of the disease, with the evidence of a perfect general health, resulting after careful treatment and training of a tuberculous subject, demands the acknowledgment that such an individual is well of the disease.

Now, in what particular way should leprosy differ from these two? Even where leprosy stalks a fearful enemy of civilization—a curse and a blight upon the nations it destroys—the hand of horror has been raised against it to such an extent that even men of the medical profession have silently let these unfortunates go the way of their antecedents because they were unwilling to inquire into the disease or to essay methods aimed at the relief of such an affliction.

Here and there earnest workers have marked some way leading to a remedy, and wherever anything has been done, it has simply become a part of the foundation on which the present stand has been taken.

The ravages of smallpox were stopped by Jenner's discovery, and then it was ascertained that under some degree of protection this disease could be cured. The plague stands to-day as a barrier in places where the investigations of its methods have resulted in preventive measures, and I tell you that when an intelligent effort is made to treat leprosy it will fall in its natural place among remediable ills, and it can be treated just exactly as the other loathsome diseases have one by one yielded to scientific procedures.

Every disease represents the acceptance by the human economy of a foreign substance, more or less parasite upon its energy, the degree of which is directly dependent upon the ability of an individual to resist. Communities survive their evils, and races die or go on to fulfil the supreme fitness of their intention directly as they may develop the inherent and instinctive quality of resistance. Disease is a direct parallel, and each type, whether in chronic or acute forms, bears a likeness to the theory.

Leprosy begins with the acceptance in the economy of the bacillus, and if it finds a fit soil in which resistance is below the normal, it spreads, in degree, to one or to every organ in the body. Its colonists are like the people of a sturdy race, finding new fields of entry, and whenever a good location is determined, there they settle, and then next consume in their development the tissues in their vicinity until the germ survives and the tissue dies.

Remedial measures are directed at flooding the field of infection, massing an amount of tissue on which the bacillus cannot feed, but which acts as fuel for the development of normal tissue; this, aided by the natural process of nature, gradually lays siege to the undeveloped foreign tissue until this is carried off or disseminated through the organs of elimination of the human body.

That the fight is a long one must be evident because no siege was ever accomplished without well-laid plans. The tone of the patient with leprosy must be raised gradually to a point where specifics in the disease may be given, where experimentation may be allowed. Many an essay of possible success has been discounted by the failure to appreciate the necessity of beginning this in an individual prepared for the trial.

As yet there is no treatment which can be said to cure all cases of the disease, but a multitude of workers are traveling along the lines leading to the avenue of final success. Each man who works in the field where leprosy exists, has, now and then, seen a ray of light pointing to a final solution. There is no evil for which nature has provided no remedy, and it remains for some discoverer to find the one for this. Meantime a life is, here and there, snatched from the leper's fate, and whenever another is added to those already cured it means just one more signal of hope to the darkened spirit of those who live in that state which, formerly, was indeed a synonym for despair.

The treatment of leprosy must be based upon the individual case. In Louisiana we have striven with various remedies but the results have been based on the physiological state of the patient.

I saw my first case of leprosy in New Orleans

in 1893 at the Charity Hospital. In June of 1894 I had seen twenty-five cases; up to April, 1905, I have seen 224 cases in Louisiana, six cases from Texas, one from Mississippi and one from Alabama; I have also seen two cases referred to me from distant States. My early experiences with leprosy were far from reassuring. The Leper Home had become an asylum, without hospital management or pretension, and persons not in the Home would avoid clinics and public places for fear of being sent to the Home.

My first attempts at the treatment of leprosy were based upon the experience of others. In 1894, the accepted treatment of leprosy was with chaulmoogra oil, hoang-nan, strychnine, arsenic, gurgun-oil, salol, salicylate of soda, ichthyol, europhen, and bichloride of mercury. No success with any of these had been reported, although chaulmoogra oil evidently occupied the position of being a remedy capable of ameliorating the disease.

Beginning in 1894, I have employed a number of remedies in treating leprosy with varying results, which it is the object of this paper to relate. It must be remembered that each case treated was treated under the most adverse circumstances. Some patients were not seen for months apart; while others would take treatment quite irregularly.

I have already stated that I believe leprosy curable. In ten cases to be related below I have demonstrated this. I wish further to state that no case of leprosy, in early or not advanced types, has failed to respond to treatment; amelioration occurs invariably and where treatment has commenced early enough and has been kept up long enough a certain number have recovered.

I have used at various times the following remedies: ichthyol, solicylate of soda, arsenic, strychnine, bichloride of mercury, chaulmoogra oil, antivenomous serum, normal horse serum, red mangrove bark, the derivative fatty acids of chaulmoogra oil.

The only remedies giving results were: strychnine, antivenomous serum, chaulmoogra oil, chlorate of potash.

With chlorate of potash one case was rid of all lesions in three weeks' time, but he did not maintain treatment and relapsed.

In 1897, I began experimenting with Calmette's antivenomous serum. The occasion which led me to this treatment has already been related in my paper presented to the Berlin Conference (*New Orleans Medical and Surgical Journal*, Oct., 1897). In that paper the results obtained were interesting. Of the cases there reported, five in all, one died unimproved, another subsequently materially improved under chaulmoogra oil, a third disappeared, while two cases entirely recovered. Of these two, one was a policeman, who, since 1897, now eight years, still fulfills his usual task, and *has had no treatment since* (excepting strychnine). The other, a carpenter, resumed his work, had no return of the disease, *without further treatment* (excepting strychnine). He died, however, of pneumonia, during the winter of 1902.

The serum was not at all effective in a series of cases afterward experimented with, but I attribute this result largely to the facts that the serum was not always fresh and that the expense attached prevented as full dosage as would have been indicated. Woodson's report of the use of the serum in one case shows that others did obtain results.

At the suggestion of Calmette himself, I experimented with normal horse serum—prepared expressly for me by Messrs. Parke, Davis & Co. This treatment was essayed in a series of eight cases for over a year but without results. Ichthyol, salicylate of soda, etc., likewise failed to secure results.

Chaulmoogra oil had been used so long for leprosy and with apparently such good results, *up to a certain point*, that it occurred to me to experiment with the derivations of *crude* chaulmoogra oil. Accordingly, Messrs. Parke, Davis & Co. separated the oil into its fat acids and delivered these to me with the residuum of the waste. I made pills of each of the acids and of the waste and experimented with each of these separately and combined. Again without result. In the meantime I was employing the usual stock chaulmoogra oil in most of my cases, but without permanent results.

I then asked Messrs. Parke, Davis & Co. to supply me with chaulmoogra oil in as crude a state as they could and yet have it in liquid.[1] I secured a quart of such oil and began now giving this in maximum doses. The results have been better than ever before and I believe that such oil more nearly approximates a specific for leprosy than any treatment as yet suggested.

DETROIT, MICH., U. S. A., June 8, 1904.

1 ISADORE DYER, M.D.,
124 Baronne Street,
P. O. Box 278, New Orleans.

DEAR SIR: Under date of May 12, we wrote you that we would postpone a final report on chaulmoogra oil, pending an attempt to obtain more definite information as to the source and process of manufacture from our Importing Branch in New York.

We are sorry to have to say that no one in this country to whom we have applied has been able to get us any definite details as to the manufacturing process. We are to-day addressing a letter to our Indian representative, and hope to obtain through him some further facts of first hand; as it will be some weeks before we can obtain a reply from this gentleman, we hand you herewith such excerpts from the literature as we think may be of some interest to you. As you will see, this information pertains rather to sources of supply than to the method of manufacture.

In Flückinger and Hanbury's Pharmacographia, the following statements are made:

"*Botanical Origin.*—*Gynocardia odorata, R.* Br. (*Chaulmoogra* Roxb., *Hydnocarpus*, Lindl.), a large tree with a globular fruit of the size of a shaddock, containing numerous seeds immersed in pulp. It grows in the forests of the Malayan peninsula and Eastern India as far north as Assam, extending thence along the base of the Himalaya westward to Sikkim.

"*History.*—The inhabitants of the southeastern countries of Asia have long been acquainted with the seeds of certain trees of the tribe (*Pangieæ* (ord. *Bixineæ*) as a remedy for maladies of the skin. In China a seed called Ta-fung-tsze is imported from Siam, where it is known as Lukrabo and used in a variety of cutaneous complaints. The tree affording it, which is figured in the Pun-tsao (circa A. D. 1596) has not been recognised by botanists, but from the structure of the seed it is obviously closely related to *Gynocardia*.

"The properties of *G. odorata* were known to Roxburgh, who, Latinizing the Indian name of the tree, called it (1814) *Chaulmoogra odorata*. Of late years the seeds have attracted the notice of Europeans in India, and having been found useful

During the several years of my observation of leprosy I have acquired certain points which I have noted in the treatment of these patients.

1. Full diet, restricting only indigestible foods is indicated. The disease seems in nowise to be affected by fish or any other particular article of diet.

2. Baths are essential in the treatment. Hot baths twice a day, with or without soda, are effective.

3. The patient needs tonics, febrifuges, and should be watched for intercurrent or complicating diseases, such as malarial infection, pleurisy, pneumonia, grippe and the like.

4. Strychnine is a *sine qua non* in the treatment of leprosy. My assistants and I lay down the rule that a leper should always take strychnine—the sort and size of dose to be regulated by the patient himself.

5. When chaulmoogra oil is given it is better endured before meals than after. It is best taken in capsules, in hot milk, or in milk of magnesia. The dosage should be begun small, say 3 drops, and increased every second or third day until as much as 120 to 150 drops of the oil are taken at the dose.

At times it is advisable to give the oil in pill form. This can be done either combining it with extract nux vomica and ordinary excipients or a very effective way is with tragacanth and common soap.

6. Above all things individualize the patient. Watch for improvement and if it does not show in three months wait six months—if it does not show in six months, wait a year, or longer. But keep on driving at the treatment until the patient dies or gets well. I have on record one patient who did not show any signs of improvement for two years, but who is now well.

7. When all evidences of the disease are gone, insist on a continuance of treatment. It may not be necessary, but it makes sure.

I am not the first to argue the curability of leprosy. Every center of leprosy shows the disease one which runs a natural course. Sometimes fulminate and destroy the patient in a few months. Other cases are slow in their onset and are slow in their outcome. Yet other cases will show small evidence, which disappears, leaving no trace and never returning. There are all grades of the disease, and the care of each must be as each directs. It only remains for me to tabulate those cases of my own which in my opinion are cured of the disease.

Case I.—Lizzie O'C., aged nineteen years; first came under observation at the Charity Hospital in the early part of 1894. She presented characteristic macules on both legs. On her left foot, plantar surface, under the ball of the great toe there was a typical trophic ulcer, with the odor and process characteristic of this leprous manifestation. Treatment with strychnine and chaulmoogra oil was established. In six months the lesions of the disease disappeared and after more than a year had not returned.

Case II.—Martin O'C., father of Case I. Disease developed seven years after it had appeared in daughter. This case presented the following history: Aged sixty-two years; native of Ireland. Laborer. Seen at Charity Hospital in the fall of 1895. Lesions presented: One large leprous macule on the forehead; one on the arm of the right side and one on the leg. All of these were uniform in size, being about two inches in their long and one and a half inch in the shorter diameter. The lesions were in the form of irregular ellipses of a dull red color and somewhat elevated. Anesthesia was marked in each. The eruption had been out only a few months and because of the rapid recovery of the daughter she had brought her father for treatment. The evidences of the disease rapidly disappeared under strychnine and chaulmoogra oil. The patient reported for observation for six months.

Case III.—August R., male, aged forty-seven years; native of Louisiana. Macular anesthetic leprosy, trophoneurotic type. Came under observation in April, 1897. The antecedent history in this case was clear. Periodic attacks of rheumatoid pains in the right arm and forearm were followed by first a sense of numbness and then contraction of the fingers. When seen the arm

in certain skin diseases, they have been admitted a place in the Pharmacopoeia of India.

"*Chemical Composition.*—The kernels afforded us by means of ether 51.5 per cent. of fatty oil, which is almost colorless, or somewhat brownish if the seeds are not fresh. Either extracted or expressed it is of no peculiar taste. The pressed oil concretes at 17° C.; that extracted by ether or bisulphide of carbon requires for solidification a lower temperature. The expressed oil is slightly fluorescent, less so than that extracted by means of bisulphide of carbon. If the oil, whether pressed or extracted, is diluted with the bisulphide, and then concentrated sulphuric or nitric acid is added, no peculiar coloration is produced.

"*Uses.*—The seeds are said to have been advantageously used as an alternative tonic in scrofula, skin diseases and rheumatism. They should be freed from the testa, powdered and given in the dose of 6 grains gradually increased. Reduced to a paste and mixed with simple ointment, they constitute the Unguentum Gynocardiæ of the Indian Pharmacopoeia, which, as well as an expressed oil of the seeds, may be employed externally in herpes, tinea, etc.

"*Substitute.*—It has been suggested that the seeds of *Hydnocarpus Wightiana Bl.*, a tree of Western India, and of *H. venenata Gærtn.*, native of Ceylon, might be tried where those of *Gynocardia* are not procurable. The seeds of both species of *Hydnocarpus* (formerly confounded together as *H. inebrians Vahl*) affords a fatty oil, which the natives use in cutaneous diseases."

In "Animal and Vegetable Fats and Oils," by Brannt:

"Chaulmoogra oil from *Hydnocarpus odoratus*, Lindl., a large tree found in the forests of the Himalaya, in the East Indies and Malayan Islands. The seed yields by expression over 30 per cent. of oil, and when extracted by ether 50 to 52 per cent. Chaulmoogra oil, when not entirely fresh or pressed from old seed, has a characteristic (bird-glue like) odor and taste, and is somewhat brownish; otherwise it is hard and without taste or odor. The expressed fat is hard up to 62.5° F., the extracted only to 57° F. In India, China and Siam the oil is used for many purposes, but specially as a remedy for rheumatic gout, and various diseases of the skin."

Squire's "Companion to the British Pharmacopoeia," edition of 1899:

"Chaulmoogra oil is obtained from the seeds of *Gynocardia odorata*. The oil has been long known and used in India; it is solid, of a light brown color, with a disagreeable taste and smell, and can be readily melted by a gentle heat. It has been recommended in the treatment of leprosy, psoriasis, obstinate eczema, and other skin diseases, chronic rheumatism and gout, and secondary syphilis. Good results have been obtained from its external as well as internal administration in phthisis. Chaulmoogra oil contains about 12 per cent. of an active principle, Gynocardic acid."

In the *Pharmaceutical Journal of Great Britain*, of May 12, 1900:

"*Notes on Chaulmoogra.*—It appears that the seeds of chaulmoogra met with in commerce, and generally considered to be the product of *G. odorata*, differ materially from those of that species. D. Hanbury ("*Science Papers*," 244) describes and

was swollen and the ulnar nerve somewhat thickened, with a nodosity the size of a hazelnut just below the elbow.

The last three fingers were contracted and could not be straightened, the effort to do so causing pain along the whole forearm. On these three fingers there was an eruption of bullae, in size about that of a silver dime; in number four or five. On the dorsum of the hand there were typical anesthetic macules. The anesthesia could be well determined fully one-third the way up the ulnar side of the forearm. From April 6 to June 22 salicylate of soda, strychnine, iodides, were given with varying result so far as the pain was concerned. The deformity persisted. On June 28, injections of antivenomous serum was begun. In all 11 injections were given in doses varying from 1½ c.c. to 3 c.c. and injected in various points of the body, chiefly along the ulnar nerve and in the interscapular area. Total amount injected 34½ c.c. On August 30, 1897, the following note was made: "There is faint rosiness over base of third finger, at second and third joints and over last phalanx; the same discoloration over the phalanx of little finger. The patient has complete use of the hand and forearm and complains only of stiffness at night in the third finger. He has improved in general health and weighs 186 against 174 pounds at beginning of injections."

This patient took strychnine sulphate in 1-60-grain doses throughout, and this was maintained afterward for some months. In January of 1898, there was no evidence of the disease and up to 1902, when patient was last seen, there has been no further evidence.

Case IV.—Henry P., male, forty-five years old; carpenter. Macular anesthetic leprosy, with trophic changes in the left hand. First seen November, 1896, at the New Orleans Polyclinic. The evidences of leprosy presented were as follows: Face, general duskiness, without distinct lesions. Ears thickened. Back, one small macule over the loin. On the right arm a distinct mottled lesion, just at the origin of the ulnar nerve; it was irregular in shape, rather ovid, with the long axis running diagonally across the inner aspect of that part of the forearm. Lesions dark brown, reddish. On the left arm, one lesion just at elbow-joint. On the outer aspect of the arm, another lesion like that on the right arm. On the flexor surface and inner aspect of this forearm, three inches above the wrist, a lesion as large as a silver dollar, purplish brown in hue. On the third finger, dorsum, deep purplish lesion, running the entire length of the finger. A similar lesion covered the first phalanx of the second finger. The left hand presented the characteristic claw hand. On the right thigh a large round lesion, 1½ inches in diameter. All lesions markedly anesthetic to pain. Up to July 7, 1897, patient had been treated variously with chlorate of potash, salicylate of soda, together with strychnine, without result. The strychnine was continued and antivenomous serum injections begun on July 7, 1897. A total of 18 injections were employed, 48½ c.c. in all; maximum injections 5 c.c.; minimum, 1 c.c. A note made August 30, 1897, relates that the lesions had disappeared in half their total area. The full use of hand restored. All injections had become painful and the patient had gained five pounds in weight. The injections in this case were kept up at less frequent intervals until the spring of 1898, when they were discontinued because of the difficulty of getting proper serum. The strychnine was maintained, however, and the patient reported regularly for observation. In June, 1898, he resumed his work as a carpenter, with no evidence of the disease left about him and without any recurrence whatever up to 1902. Then he died of pneumonia.

Case V.—K. G., aged forty-five years; merchant. Presented July 20, 1898, with some six leprous tubercles on his face and as many more distributed on different parts of the trunk and

figures Chinese chaulmoogra seeds as imported from Siam into China, as having foliacious, lanceolate cotyledons, which he recognizes as not being identical with *Chaulmoogra odorata* of *Roxburgh*, that authority describing the cotyledons of C. odorata as being subreniform, with the radicle variable. Notwithstanding this, in works on materia medica and in museums, the chaulmoogra seeds of Hanbury are attributed to *C. odorata*. G. Desprez has recently received from Calcutta specimens of both seeds. He describes the true *Chaulmoogra odorata* seeds as being larger, less uniformly gray, the testa being marked with dark patches. The integuments are not so brittle as in the ordinary kind, the kernel is reddish and marked with white. The cotyledons are thick, subreniform, the radicle placed at the side. These seeds contain a large amount of hydrocyanic acid. The seeds generally met with in commerce ar uniformly gray in color, the integuments are brittle, the kernel is dark in color, with a rough surface, the cotyledons are foliaceous-lanceolate, and the radicle direct, as described by Hanbury. These seeds contain no prussic acid." *Journ. de Pharm.* (6), 11, 31c.

In the *Pharmaceutical Journal of Great Britain*, May 11, 1901, there occurs the following note by E. M. Holmes, Curator to the British Museum:

"Allusion has generally been made in this journal to the fact that chaulmoogra seed has been supposed to be yielded by another plant than *Gynocardia odorata*, but hitherto, in the absence of specimens, and judging from the meager information afforded in the *Journal de Pharmacie*, it has been impossible to publish full information concerning the facts. In the *Indian and Colonial Addendum to the Pharmacopoeia*, under Oleum Gynocardiæ, the oil is stated to be the fatty oil expressed from the seeds of *Gynocardia odorata*, or of *Gynocardia Prainii*, Desprez. As a matter of fact, neither the chaulmoogra seeds nor the oil are obtained from *Gynocardia odorata*, but from an undescribed tree which M. Desprez proposed to call *Gynocardia Prainii*, in honor of Dr. D. Prain, the Director of the Calcutta Botanic Gardens. Dr. Prain, however, in a letter to me, accompanying the excellent specimens of the seeds sent by him for the Museum, states that so far as the imperfect material in his possession permits he has formed the opinion that the tree which produces the chaulmoogra seeds of commerce does not belong to the genus *Gynocardia* at all, but probably to the genus *Hydnocarpus*. He will not be able to determine this point satisfactorily until the tree flowers (which may not be until June), when he will communicate a note on the subject of our journal. The seeds of *Gynocardia odorata* are quite different to chaulmoogra seeds, having the radicle laterally placed, giving off hydrocyanic acid when moistened, and having a thinner testa."

In *Pharmaceutical Journal of Great Britain*, Sept. 14, 1901:

"*Oleum Gynocardiæ* is obtained by expression from the seeds of Taraktogenous kurzii, King (N. O. Bixaceæ), a native of Burmah. The oil possess alterative and emetic properties. It is administered in the form of an emulsion, or mixed with other oils, and the dose is from 5 to 10 minims, gradually increased to 0.5 to 1 fluid dram.

"*Characters and Test.*—Chaulmoogra oil is a brownish-yellow oil, or fat, of varying consistence, having a characteristic odor and a somewhat acrid taste. It has an acid reaction, and may fully liquefy only at 42° C., resolidifying in different periods at temperatures from 15.5° C. upward. The specific gravity of the oil is also not constant, but is usually from 0.930 to 0.954 at 30° to 40° C. The oil is soluble in purified ether, chloroform, or carbon bisulphide, and the greater part of it is dissolved by cold 90 per cent. alcohol, the remainder being dissolved by repeated treatment with warm alcohol. A little insoluble, non-fatty matter is sometimes present in the oil, and causes turbidity of solutions in the liquids mentioned. A reddish-brown coloration, changing to olive-green, is produced on mixing twenty drops of the oil with one drop of strong sulphuric acid.

legs. Each of these was fully as large as a small marble and characteristic in clinical appearance. One of the tubercles was excised and the leper bacillus demonstrated. Patient was put under treatment but inside of three weeks his face was covered with new lesions; proportionately as many developed on the rest of the body. As this case had developed altogether in less than three months he was advised to change climate and left New Orleans. He returned at the end of two years, having been subjected to very rigorous treatment in Europe, and on my examination was found free of the disease. Since 1900 I have seen this patient at regular intervals of four or six months, and there has been no evidence in any way whatsoever of a recurrence. His treatment consisted in strychnine and chaulmoogra oil.

Case VI.—Mrs. G. Peterson, aged twenty-seven years. Applied for treatment at the Charity Hospital, September 22, 1899. She presented a deep-seated macular leprosy tubercle the size of a silver dollar on the right side of her neck. There were two lesions twice this size on each leg. On both hands there were leprous nodules and the ulnar nerve on the left side was perceptibly enlarged. Some contraction of the two last fingers. Patient took strychnine in 1-50-grain doses and chaulmoogra oil in increasing doses until 40 drops at the dose were taken. In October, 1902, there was no evidence of the disease. This patient has reported regularly at intervals of every four months up to the present time, and there has been no recurrence.

Case VII.—Blanche B., aged twelve years. Reported for treatment July 22, 1901, presenting a typical lesion the size of a silver quarter over the right maxillary region. Another lesion as large as the palm on the right leg. Both typical leprous macules. One-sixtieth-grain doses of strychnine sulphate and increasing doses of chaulmoogra oil were administered. A maximum of 30 drops was reached. In June, 1902, both lesions had disappeared. Treatment was continued until 1903. Patient has reported at intervals since then and there has been no recurrence.

Case VIII.—A. G., aged thirty-three years; female. History of the disease of ten years' standing, progressively increasing until I saw the case. At this time the face was covered with ulcerating tubercles; the hands were considerably swollen, here and there presenting bullae and ulcers of typical character. No area of the body was free of discoloration, macules or tubercles. Treatment was begun in March, 1901. One-fiftieth grain strychnine sulphate was administered three times a day. Chaulmoogra oil was given in increasing doses to 60 drops three times a day. In addition, arsenic and glycerophosphates were administered from time to time. The nose was kept flushed with glycothymolin and hot baths with carbonate of soda at 95° F. were given twice a day. In July, 1903, the patient was free of any leprosy lesion, bacteriological examinations of secretions and urine proved negative. Up to the present time the patient has been bacteriologically examined three times with negative results. There has been no recurrence of the disease.

Case IX.—J. C., aged thirteen years. This boy has been the subject of widespread newspaper report because of his discharge from the Louisiana Leper Home. He was admitted in 1902 as a typical case of tuberculous leprosy. His treatment consisted in 1-60-grain doses of strychnine sulphate and chaulmoogra oil up to 100 minims at the dose. His improvement began promptly, and, at the end of one year, the tubercles had disappeared. In June, 1904, there were some small areas of pigmentation left. In December, 1904, after negative bacteriological examination, and the lack of any evidence whatsoever of the disease, the boy was discharged. He is still kept under observation and up to the present time remains well.

Case X.—S. J., aged thirty-eight years; native of New Orleans. First seen March 30, 1898. Typical tuberculous leprosy involving face, hands, legs and back. The patient persistently improved under chaulmoogra oil and strychnine, never reaching more than 40 drops of the oil. She has been free of any evidence of the disease since 1903.

The Louisiana Leper Home might have afforded wide opportunity of sucessful therapeutic investigation were it not for the fact that the policy of the Board of Control, after I resigned in 1806, directed the Leper Home as more of an asylum than a hospital. As a result, during the

"*Notes.*—It has been supposed that the source of chaulmoogra oil is *Gynocardia odorata*, R. Browne, or *G. Prainii*, Deepres; but neither of these plants appears to produce the chaulmoogra seeds of commerce, from which the oil is obtained. The chief constituent and active principle of the oil is gynocardic acid, which causes the coloration produced on mixing the oil with sulphuric acid. The oil contains gynocardic and palmitic acids, both in the free state and as glycerides, while the glycerides of hypogaeic and cocinic acids are also present. Gynocardic acid can be obtained in crystalline plates and has an acrid, burning taste."

"As you will note from the above quotations, the true source of chaulmoogra oil has been uncertain till within very recent times. The quotation from the *Pharmaceutical Journal* of Sept. 14, 1901, above cited, is probably the most reliable summing up of the facts in the case. The statements there made as regards physical properties and chemical tests are characteristic of the oil which we handle, and which we import direct from India. As you will note from the facts above quoted, there is a slight difference between the oil as prepared by the more or less crude, native process of expression and that prepared by the more modern, scientific methods of expression by solvents. The latter oil prepared by the solvent process is most likely to be obtained from European sources, where such plants for the economical extraction of vegetable oils are located; on the other hand, *the oil obtained from India is most likely to be made by the old-fashioned process, and we have continued to obtain our oil from East Indian sources, as it is upon such expressed oil that the reputation of this remedy is based. You will understand that we are not prepared to state that the highly refined oil prepared by the solvent process in Europe is not entirely as good as the crude oil made by the natives in India, but, so long as this has not been demonstrated by actual clinical tests, we have thought it advisable to stick to the Indian supply.*

"We are very sorry, indeed, that we have not been able to offer you more detailed information as to the native method of manufacture, but, as you see from the above quotations, about the only fact apparent is that the native process consists in grinding or crushing the seeds and then submitting them to expression. If there are any further facts relating to this subject upon which you think we can possibly throw any light, we shall be very glad to receive some further communication from you.

With best wishes, we remain, Yours very truly,
(Signed.) PARKE, DAVIS & Co.,
Per J. M. F.

years 1896-1902, no specifie treatment was applied to the inmates of the Home, and they were allowed to fulfil the natural outcome of the disease. Since 1902, regular systematic treatment has been adopted with the result that marked amelioration has been obtained in every case not too far gone. Dr. Ralph Hopkins, my chief of clinic in the Tulane Medical Department, and clinical assistant in the New Orleans Polyclinic, has systematic charge of the Home, and it is to his care and judgment that whatever results that have been obtained are due. Analysis of his very able report embodied in the last report of the Louisiana Leper Home (1904) to the Louisiana State Legislature, clearly evidences what results have been obtained. In the 40 odd cases treated a variety of remedial agents were employed. Of these the most effective were chaulmoogra oil, strychnine and salicylate of soda. The red mangrove, normal horse serum and miscellaneous agents experimented with proved of little avail.

It is to be remarked that almost all patients taking chaulmoogra oil have improved.

Of the present inmates in the Home there are fully a half dozen who have improved to the point of certain arrest in the disease; two of them being now kept under observation with the idea of their discharge at no far distant date.

So much newspaper notoriety has attached to my work with leprosy that I have considered it a privilege to present this whole subject before the association of medical men in my native State of Texas. I am not alone in believing leprosy curable and can cite such men as Fox, Unna, Crocker, Hutchinson, as among those who have cured the disease and who have recorded their work in this direction. I believe that no such number has as yet been recorded as those given above by me. Mr. J. F. Tonkin, officially representing the British government, reports upon the conditions in Jamaica in his report for 1903, and states that since the Kingston Leper Hospital was instituted a total of sixteen cases have been discharged.

I cannot conclude this paper without referring to the able contributions to this subject by another Texan, Dr. R. H. L. Bibb, now located at Saltillo, Mexico. Besides having written the most exhaustive paper yet published on the treatment of the disease (Alvarenga Prize Essay for 1905) he has emphatically declared himself in believing that chaulmoogra oil is the specific for leprosy.

It may be some time before the majority of the profession can be persuaded to the precept which this article conveys, but if I have succeeded in stimulating a discussion, contrary or otherwise, I shall be satisfied that the work embodied has not been in vain.

Medical Consultations in China.—Medical consultations are carried to their extreme limit in China. There, when any one becomes seriously ill, a consultation of 15 or 20 doctors is held. The doctors fill the house with their arguments. They make as much noise as a political convention.

PRIMARY SARCOMA OF THE STOMACH.[1]

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ALTHOUGH it is true that sarcomata must be included among the rare tumors of the stomach, yet recent studies have demonstrated that they may possibly occur more frequently than is generally supposed. Fenwick is probably not far from the truth in his assertion that they constitute from 5 per cent. to 8 per cent. of all gastric tumors. In proof of his claim he urges that the greater number of cases has been reported since attention was especially called to their occurrence by Virchow, forty years ago, and that the reexamination of some specimens which had been catalogued as gastric cancer has demonstrated that the tumors were really sarcomata. Furthermore, that although Schlesinger was able to collect only 30 cases in 1897, yet in November, 1900, the number of cases exceeded 60. Rosenheim also states that sarcomata are not as rare as is supposed. Perry and Shaw found 4 cases of sarcoma in 50 cases of malignant disease of the stomach; Haberkahndt found 3 sarcomata in 207 pyloric resections; while Czerny found only 2 sarcomata in 298 gastro-enterostomies.

The two cases which I shall report occurred within one year at the Mt. Sinai Hospital. Dr. Harlow Brooks informs me that in addition to the case which he published in 1898 he has since been able to collect 3 additional cases during nine years' service at Bellevue Hospital.

That uncollected cases may be scattered through the literature was strikingly shown to me recently when, while hunting up a false reference in the transactions of the London Pathological Society, 1889, I found an unreported case of diffuse gastric sarcoma.

On the other hand, Alesandri, whose article is one of the most recent on the subject, still maintains that they are very rare. This question is of interest, not so much from a diagnostic and pathological standpoint, as to that of prognosis, since the results of operation in some cases of sarcoma are decidedly better than in carcinoma as is well shown in Dock's case in which a large lymphosarcoma was removed over four years ago. I have learned from a recent personal communication from Prof. Dock that the patient is still alive and well. It is possible, therefore, that in the absence of more definite pathological details on the subject, some of our observations on the operative results of carcinoma of the stomach may be modified.

To consider many of the details of the pathology, symptomatology, etc., is scarcely necessary, since much of it would be a useless repetition of what has already been well presented by Schlesinger, Fenwick, Alesandri and other writers.

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1 Read at the Eighth Annual Meeting of the American Gastro-Enterological Association, held at New York, April 24 and 25, 1905.

Here it will suffice to call particular attention to certain practical features:

1. That the new growth arises from the submucosa or muscularis, the mucous membrane being involved only late in the disease as a secondary result, or it may escape entirely. The curvatures, especially the greater, are usually involved, the pylorus being less frequently attacked.

2. The growth may be diffuse, as usually occurs in lymphosarcoma, or it may be circumscribed, this being the ordinary form of the spindle-celled type. These circumscribed growths often assume a polypoid form, growing either into the lumen of the stomach, or outwardly into the greater or lesser peritoneal cavity. These polypoid tumors constitute a very puzzling group, the diagnosis of which is exceedingly difficult, since it is in these cases that the mucous membrane is usually intact while few if any of the symptoms draw attention to the stomach as being the real source of the neoplasm.

3. The orifices are rarely stenosed and if the pylorus is involved the stenosis never reaches the degree so frequently encountered in carcinoma.

4. Degenerations frequently occur in these tumors. These include hemorrhages, cystic degeneration, formations of fistulous tracts, etc. On the other hand, it is to be noted that sometimes the sarcomata are themselves degenerations of other benign tumors such as fibromata, myomata, etc.

5. As regards size, they may constitute large tumors (weighing 12 pounds or more), or they may be so small as to be found only by mere chance at autopsy.

6. They may be primary or secondary. The latter are the rare forms, except in lymphosarcoma where the secondary forms are commoner than the primary. Doubt has even been cast upon the cases of primary lymphosarcoma since it is urged that some small, primary lymph-gland tumor may have escaped notice. These secondary lymphosarcomata are usually derived from some growth in the neck, pharynx, gums, rectum, retroperitoneal sarcoma, etc., or they may constitute part of a general lymphosarcomatosis of the gastro-intestinal tract, or they may be an internal manifestation of Hodgkin's disease.

7. Metastases may occur in neighboring or distant organs, or they may be absent. The distant organs may include the skin, testicles, tongue, tonsils, rectum, etc. The skin metastases are of particular interest since their occurrence is much more frequent than in cancer and may thus afford much important diagnostic information.

8. *Age.*—The range is very great. Finlayson's case occurred at 3½ years and the case of Malvoz occurred at seventy-eight. Fleiner states that they may even be congenital. As a rule the average age is younger than in carcinoma; thus the 4 cases of lypmhosarcoma reported by Perry and Shaw were fifteen, eighteen, thirty-eight and sixty-seven years old.

Special attention may be directed to a group of cases with gastric symptoms in which hematemesis is the leading symptom. Although it has been shown that bleeding is a relatiyely infrequent symptom in gastric sarcoma and is used as one of the points of differential diagnosis, yet cases have been reported in which the bleeding was either an early or a late symptom and even led to that mistaken diagnosis of gastric ulcer.

One of the earliest cases with hematemesis is that of Hartley to whom I am indebted for the following report:[1]

Mrs. B., fifty-four years. Five years ago (1890), without any special cause, she vomited a large amount of coffee-ground material. The vomiting did not recur and she went on for four years in fair health, except for the heavy feeling after eating. One year ago she again vomited blood of coffee grounds and clotted in character for five mornings in succession; this was again without cause or exacerbation of gastric symptoms. The pain in the back which she had suffered previously became much worse at this time and she noticed a considerable swelling of the stomach.

Physical Examination.—In the left lumbar and left umbilical region is a rounded tumor about the size of the adult fist, which is hard and elastic, freely movable and easily displaced up into the left hypochrondriac region.

Operation.—April 26, 1895. Incision 5 in. long, just to the left of the left rectus; the hand was introduced and prolonged search made. The kidney could be felt in place, the large intestine bulged into the wound and was normal; behind the mesocolon and in what appeared to be the position of the spleen was the large tumor; the spleen was not felt. The mesocolon was torn through and the surface of a tumor in lesser peritoneal sac disclosed. This tumor was brought through this opening in the mesocolon and it was seen that it arose from the posterior wall of the stomach by a pedicle 1½ in. in diameter. The stomach was pulled well out and graped by house surgeon well below the pedicle. The stomach was now cut through entirely around the pedicle and a circular part of stomach wall excised. Abdominal wound closed in usual manner with drainage in center.

Pathological Report.—By Dr. Ferguson, May 10, 1895. The material is a pear-shaped tumor measuring 15 x 10 x 8 cm. Its surface is smooth but nodular. It is apparently covered by peritoneum. The tumor is cystic, the cysts varying in size from ½ to 4 cm. in diameter. The tumor is firm in consistency and of pale gray color. An area of stomach wall 5 x 4 cm. has been removed with the tumor, the mucosa has not been ulcerated but is intensely hyperemic. Sections show the ordinary appearance of spindle-celled sarcoma. The vascular supply is abundant, some of the vessels being large with thin walls.

1 This is the case which was published in the Annals of Surgery, 1896, Vol. 23, p. 609.

Discharged cured, June 1, 1895.

Case II, which I present, was also marked at its close by severe hemorrhages from the stomach and bowels.

Oberst has just published a paper in which he directs especial attention to this group of cases; he reports a case of gastric sarcoma (man, twenty-five years old) which was mistaken for a gastric ulcer. He also quotes a similar case of Robert and two of Kundrat. He therefore urges that the possibility of gastric sarcoma should be considered in youthful individuals with hematemesis in which the course is unusual or in which there is delayed convalescence after hemorrhage of the stomach.

Symptoms.—The cases may be divided into two great groups: First, those without; and second, those with gastric symptoms.

In the first group are included the cases in which the tumor grows outwardly into the peritoneal cavity and also many of the cases in which the growth is toward the gastric lumen but in which the infiltration of the stomach does not involve the pylorus and leaves the mucous membrane intact. This group includes the unusual cases of abdominal tumors which have been incorrectly diagnosticated, the true condition being revealed at operation or at autopsy.

The complications from the peculiarity of the growth may dominate the picture, such as adhesions, torsions, displacements, hemorrhage in the tumor, cystic degeneration, suppuration, etc., or, metastases may cause leading symptoms such as disturbances in the intestines, rectum, etc. One peculiarity of the intestinal metastases is to be noted—that they rarely cause stenosis, being thus unlike the secondary growths which occur in gastric carcinoma in which stenoses may much more frequently occur.

In the second group the gastric symptoms are practically those of gastric cancer. In most cases, however, the gastric symptoms are mild and only become marked toward the end of the patient's life.

A few points of differentiation may be noted. That vomiting and hemorrhage are less frequent and are usually only late symptoms. On the other hand, pain, fever, albuminuria, marked anemia and weakness are more marked and occur much earlier; indeed, the marked anemia and weakness may for a long time be the only symptoms. The appetite may fail, or, as in gastric cancer, may persist throughout. Perforation occurs more frequently. Marked splenic enlargement is much more frequently noted than in gastric cancer. On the other hand, omental and peritoneal involvement are less common. The skin metastases have already been referred to. A number of other minor conditions have been reported, still they are too inconstant to be of great differential diagnostic value.

The physical signs are inconstant as is readily understood from what has already been said concerning the pathology. Fenwick states that tumor was present in only 30 per cent. of the cases, and when the tumor was present it was frequently mistaken for tumor of the spleen, of the pancreas, kidney, omentum, ovary or retroperitoneal glands.

There are great variations in the size of the stomach since it may be enlarged or contracted or displaced or distorted, as occurs in the unusual cases where there is marked downward displacement of the stomach which is at the same time distorted into a sausage-shape resembling the transverse colon.

The stomach contents have been observed in about ten cases. They are practically identical with those found in cancer of the stomach. In one of the cases which I report the same is to be noted. In one case which was under observation Erlach could follow the transition from normal chemism to complete absence of hydrochloric acid which occurred later in the disease. In several cases there was no change in the gastric secretion. Indeed, considering how long the mucous membrane remains uninvolved it is surprising that there is as much change in the chemism of the stomach as has been reported.

The stagnation in the stomach contents is not due so much to pyloric obstruction in these cases as it is to the infiltration of the muscularis.

Diagnosis.—The possibilities of diagnosis are best summed up in the words of Leube who has allowed them to remain unchanged even in the recently published edition of the *Diagnostik:* "In my opinion these tumors *cannot be diagnosticated*, not even when the conditions are very favorable for making a clever diagnosis, because of the presence of a general sarcomatosis or cutaneous sarcomata. In one such case, it is true, I found a gastric sarcoma, but in another case of skin sarcomatosis the tumor in the stomach was a true epithelial cancer." However, if more exact points of differentiation are desired, I may quote the differentiating points given by Fenwick, who claims that "a diagnosis of round-celled sarcoma of the stomach may often be made by attention to the following points:

1. The disease usually occurs before thirty-five years of age, so that the younger the patient the greater the probability that the malignant affection is sarcomatous in character.

2. In many cases there is slight but continuous pyrexia, accompanied by rapid and profound anemia, while in carcinoma fever is usually absent during the early stages of the complaint and the cachexia much more gradual in its development.

3. Enlargement of the spleen is by no means infrequent but is rarely met with in cancer unless the organ is involved in the growth.

4. According to Kundrat the tonsils are apt to enlarge and the follicles upon the sides of the tongue may become swollen or ulcerated.

5. Secondary deposits in the skin occur in a notable proportion of the cases and permit of excision and microscopic examination. It should

be remembered, however, that sarcomatosis has been met with in true cancer of the stomach (Leube).

6. A large nodular tumor due to infiltration of the omentum and a greatly enlarged liver with secondary growths in its substance are rarely met with.

7. Persistent albuminuria is often observed in sarcoma but is exceptional in cancer.

8. The discovery of pieces of morbid growth in the vomit renders the diagnosis certain. (Riegel, Westphalen).[1]

Prognosis.—As already stated, this in some cases is decidedly better than a carcinoma; in other cases, however, the course may even be more malignant.

Treatment.—If the diagnosis has been made arsenic ought to be used as it is in all cases of lymphosarcomatosis, otherwise the treatment is strictly surgical.

The histories of the two cases I present are as follows:

Case I.—L. S., shoemaker, forty-eight years of age, was admitted to Mt. Sinai Hospital to the service of Dr. Alfred Meyer, September 26, 1903. His symptoms are of four months' duration—loss of appetite, occasional vomiting of food, obstinate constipation. He has lost considerable flesh and strength. General condition fairly good; tongue moist, coated; a few small glands in the neck, axilla and groin. Physical examination negative throughout. Abdomen lax, tympanitic, no tenderness, no tumor palpable; general visible peristalsis. No fever. Urine negative. September 27—Test breakfast (Ewald).—Slightly digested; total acidity 40 per cent.; free hydrochloric acid absent; combined acids 30 per cent.; no lactic acid. Ferments absent.

September 30—Total acidity 84 per cent.; free hydrochloric acid absent; combined acids 26 per cent.; lactic acid present; no blood. Ferments absent.

He left the hospital October 2 very much improved. He was readmitted on December 7. For ten weeks previous to his readmission he had had fever, pain in the upper right quadrant of the abdomen, the pain having no relation to the ingestion of food. Eructation and cardiac palpitation after eating. Progressive loss of flesh and strength. Vomited only once; no blood. Defecation and urination normal. Chief complaint abdominal pain and weakness.

Physical Examination.—Mucous membranes pale; pupils unequal, the left being somewhat larger than the right. Abdomen: The veins on both sides of the lower abdomen dilated. Liver extends to three fingers below the free border In the right hypochondriac region a large mass, somewhat irregular in shape, with a sharp edge can be felt; it extends on the right to the mammillary line, on the left it reaches one-half inch to the left of the middle line; its lower border is within one-half inch of the umbilicus; it is dull tympanitic on percussion and not tender; otherwise the abdomen is negative. Urine negative.

Blood Examination.—Thirty per cent. hemoglobin; red blood cells, 4,000,000; white, 13,600.

Test Breakfast (Ewald).Two ounces removed; fairly digested; total acidity 26 per cent.; free hydrochloric acid absent; lactic acid present; ferment absent.

December 10—The patient vomited a very large amount of undigested food. The mass became much more prominent after this and extended from the right mammillary line to the left parasternal line, above it reached the free border of the ribs, on the right of the mammillary line, midway between the umbilicus and the xiphoid was a sharp edge. Dull tympany over the tumor.

December 12—Movable dulness in both flanks, fluid in the abdomen. The patient is now running a slight evening temperature. The urine now contains a faint trace of albumin. For the past few days he has had three to four stools daily.

Consent having been obtained for an operation he was transferred to Dr. Gerster's service where a gastro-enterostomy was performed on December 14. Death three days later.

Autopsy seventeen hours after death by Dr. Libman.

Murphy button found at site of gastro-enterostomy, good apposition of stomach wall and jejunum.

Lungs.—Right upper lobe was in incomplete gray hepatization. Both lungs adherent; markedly anthracotic. Pleura showed a moderate number of hard thickenings, some flat, some nodular. Acute pulmonary edema.

Stomach.—Moderately dilated. At pylorus a large, hard nodular tumor adherent to pancreas and duodenum and involving the whole circumference of the stomach for a distance of 3 inches from pylorus. Parts of the tumor were soft and had undergone degeneration. Pylorus admitted one finger. The interior of the stomach showed the same tumor ulcerated and involving the pylorus and stomach but not the duodenum. In other areas of the stomach wall there were some small hemorrhages in the mucosa.

Liver.—Normal size and consistency. Cloudy swelling (no metastases).

Kidneys.—Capsule of the right adherent. Both acutely degenerated.

Microscopic examination of the gastric tumor proved it to be a lymphosarcoma.

Case II.—Mrs. A. S., forty-eight years of age, admitted to Mt. Sinai Hospital, under the care of Dr. Albert Kohn, August 6, 1904. For years this patient had had repeated uterine hemorrhages, supposedly due to fibroids, for which, however, she had refused operation. Not long before she came under treatment she had several uterine hemorrhages and her intense anemia was supposed to be due to that cause.

She was first seen July 3 with the symptoms of a marked secondary anemia, confirmed by several

[1] Schlesinger made the diagnosis in one of the cases from a piece excised from a metastatic mass in the rectum.

blood examinations. Loss of flesh and strength were not marked. Complaints were of extreme dizziness, sinking sensations, inability to assume the upright position. Headaches general. Loss of appetite, nausea, eructations. Vomiting only once or twice. She had many movements (9 to 12 daily) which were very loose, tarry and controlled with difficulty. Tenderness over the entire abdomen with pain, both marked over an epigastric tumor which was the size of a peach. The tumor was freely movable and did not disappear under the ribs. Her temperature was never above 101.5° F.; never subnormal.

Blood Examination.—Hemoglobin 18 per cent.; red cells 1,590,000. A few poikilocytes and microcytes; granular degeneration of red cells; moderate relative leucocytosis. Stools contain pus and red blood-cells. Hemin test positive. Urine 1.010, large trace of albumin; no tubercle bacilli.

The diarrhea, loss of appetite, nausea, eructation and obstinate loose, watery stools with small blackish fecal particles, the increasing anemia and abdominal pain and tenderness were the only symptoms. During observation at the hospital the most prominent symptoms were sighing respiration and weakness, diarrhea and vomiting, melena and bloody vomit. The physical examination showed not only a mass in the epigastrium, but two masses, one in each iliac fossa which were apparently new growths. However, on post-mortem examination nothing could be found to account for these two tumors. Test-meals could not be given on account of the wretched condition of the patient. She died August 13, 1904.

Autopsy.—By Dr. Buerger. *Lungs.*—Congested at base; few pleural adhesions. *Liver.*—Grayish-brown color, pale, firm consistency; marked parenchymatous degeneration, pigmentation, slightly fatty. *Stomach.*—Externally negative except for a somewhat depressed, scar-like area, 4 cm. proximal to pylorus, in the immediate neighborhood of which are stellate dilated vessels. Capacity somewhat increased; wall slightly thinned. About 4 cm. from the pylorus on the anterior wall there is a soft grayish-pink flattened sessile tumor, almost circular in outline, raised by a rounded though irregularly lobulated convex surface 12 mm. above the surounding mucosa. It appears even less prominent than this owing to a very marked, raised, somewhat circular, well-defined margin of slightly cicatrized mucosa immediately surrounding it. At one portion it is ulcerated and excavated so as to be on a deeper level than the mucosa of the stomach. Upon section it presents a radiate, irregular, streaky surface, here and there beset by small hemorrhages.

Microscopic examination shows it to be a myosarcoma. Intestines practically negative except for the presence of altered blood. In the ileum there are several script-like areas of brown pigmentation. No ulcerated areas or any points of bleeding could be found. Uterus contains small submucous fibromata. Bone marrow red in color, soft, diminution of fatty elements. Kidneys, intense parenchymatous degeneration. Interstitial changes in medulla. Spleen congested.

LITERATURE.

The literature of sarcoma of the stomach may be found in the following references which include the most important contributions to this subject.

Schlesinger. Zeitschrift für klin. Medizin, Bd. 32, Suppl. Heft, 1897, p. 179.

Fenwick. Cancer and Tumors of the Stomach, 1902, pp. 272-283.

Alesandri. Mittheilungen aus dem Grenzgebiet der Med. und Chir., Bd. 12, Heft 4.

Oberst. Beiträge zur klin. Chirurgie, Bd. 45, 1905, Heft 2, p. 477.

CYSTIC KIDNEY AND LIVER.[1]

BY HERMAN A. REQUE, A.B.,

OF CHICAGO, ILL.

THE cases which I wish to discuss belong chiefly to that form of cystic kidney in which there is a total cystic degeneration of the organ and, usually, a great increase in its size. This form has also other features which seem to differentiate it from the ordinary retention cysts sometimes found in chronic nephritis and from the so-called solitary cysts. Some of its peculiar features are the following: (1) It is generally bilateral; (2) it often occurs with cysts of the liver or other organs; (3) it is often, according to some authorities, always, congenital; (4) it is sometimes associated with malformations, as polydactylism, webbed toes, cleft palate, hydrocephalus, anomalies of the genitalia, etc.; (5) it has been found in several members of the same family; (6) it presents microscopic appearances, in many cases, which are difficult to explain by any purely inflammatory or retention theory.

It is not to be inferred that all cases presenting any of these features necessarily have the same origin, but they are often grouped together under various names, as cystic kidney proper, congenital cystic kidney, polycystic degeneration of the kidney, or the gros rein polykystique of the French.

Several specimens and records of such cases exist in the pathological laboratory of Rush College and form the basis of this report. Two of the cases are accompanied by cystic degeneration of the liver.

Before going on to describe these cases I will attempt to give a brief résumé of some of the most important recent literature on this subject as well as briefly to mention the different theories of origin of cystic kidney and liver that have been advanced. A concise consideration of the whole subject is found in an article by Hektoen, written in 1892; of more recent ones that by Dunger is especially noteworthy and gives a complete bibliography up to date.

Virchow noted the occurrence of cystic kidneys in several children of the same mother and was inclined to explain them as due to some

[1] From the Pathological Laboratory of Rush Medical College, Chicago.

inflammation occurring in utero, depending on some product derived from the maternal organism, and involving especially the papillæ so as to cause an occlusion of the discharging tubules —a papillary atresia. This view represents one form of the retention theory. Cystic kidney in the adult Virchow thought to be simply the remains of a condition developed in fetal life.

The retention theory was supported among others by Thorn, who thought that an inflammation of the renal pelvis with involvement of the medulla was probably a frequent cause. Durlach describes a case in a child of six months, where a primary pyelitis had produced cysts. Arnold has described an interstitial papillitis. Leichtenstern expresses the view that the same processes which ordinarily set up an interstitial nephritis may, under certain circumstances, affect chiefly the arteriolæ rectæ veræ and thus cause a primary nephropapillitis, resulting in the occlusion of single tubules and the formation of retention cysts. Ewald and others adopt one of Virchow's earlier views and make a precipitation of uric acid or other substances in the tubules responsible for the cyst formation. This is again a form of the retention theory. More recently, Stieda described a case in a woman twenty-seven years old of bilateral cystic kidney "*in statu nascendi.*" In this case the cysts were small and the organs very moderately enlarged. There was no evidence of any epithelial proliferation nor of any very recent inflammation. But there were present dissemminated foci of scar tissue, probably due, the author thinks, to some past, rather acute inflammatory process, perhaps a pyelonephritis. Closure of the tubules by these foci of scar tissue he thinks to be the cause of the cysts, which would then be retention cysts, pure and simple. Whether this past inflammatory process would be capable of carrying on the cyst formation to the stage of a total polycystic degeneration is another question. As bearing on this point, an experiment by Tollens may have some interest. It is well known that ligation of the ureter causes atrophy of the kidney. More closely to reproduce the conditions found in a nephropapillitis, the kidneys of rabbits were exposed and opened by longitudinal incisions and the papillæ then cauterized so as to close effectually all ducts in the papillæ so treated. The kidneys were removed and examined after intervals of 4, 8½ and 12 weeks. After four weeks the kidneys were found to be double their normal size and full of minute cysts formed by dilatation of tubules. In the papillæ all the tubules were closed by scar tissue. Some of the tubules affected showed several layers of epithelium and other apparent efforts at regeneration or proliferation. There was a great proliferation of connective tissue. The kidneys examined after 8½ weeks were much smaller than normal: The obstructed tubules showed in part increased dilatation, in part total compression, while some had again found an outlet into the pelvis. These changes were still more pronounced after twelve weeks. Considerable connective tissue remained and became sclerotic. Some cysts also remained. But the general conclusion drawn by Tollens is that the closure of the excretory ducts, where it is permanent, in the kidney as in other glandular organs, simply results in destruction of the parenchyma, which is replaced by scar tissue. It seems to me that this experiment would tend to show that a past inflammatory process does not result in cystic degeneration in the narrower sense. It does not appear from the original article whether the author intended to prove or disprove any theories as to cystic kidney.

That such processes as those mentioned can and do produce cysts in the kidney, both bilateral and unilateral, seems certain; but many of the cases so explained would probably belong with the ordinary retention cysts of chronic nephritis.

Still calls attention to the fact that cystic kidney is more frequent in the female than in the male, in the proportion of four to one, while interstitial nephritis is more frequent in the male, in the proportion of five to one.

A second theory, supported by many recent investigators, is the cyst-adenoma theory. As early as 1876, Michaelowicz suggested that "cystic degeneration of the kidney is analogous to cystic disease of the testicle, mammary gland and ovary." Brigidi and Severi describe a case of bilateral cystic kidney as true tumor formation —cystoma of the kidney. Chotinsky thinks that proliferation of the epithelium precedes the cyst formation and may be a cause of the same by obstructing the tubules and causing retention of the secretions. Orth suggests that adenomatous cysts with a primary proliferation of the epithelium may have to be differentiated from retention cysts with a passive condition of the epithelium, especially in those cases where cysts of the liver are also present. Lejars describes the process as a mucoid epithelioma similar to that of the testicle and ovary. Sabourin expresses the view that the cysts have their origin in a special evolution of the urinary tubules, the epithelium of which has been reduced to an indifferent state by cirrhotic processes and then later forms alveoli and nodules which develop into cysts. This view is pronounced by Dunger to be far-fetched. Philippson describes solid epithelial processes in the tubules as possible factors in cyst formation. He also found papillary growths covered by epithelium extending into the cysts.

One of the most important contributions to the cyst adenoma theory is that of Nauwerck and Hufschmied. These investigators found much evidence of inflammation, especially a great proliferation of connective tissue; but they lay more stress on the evidences of epithelial proliferation. They found solid epithelial processes extending from the tubules and pushing out through the basement membrane; solid masses

of epithelial cells within the tubules; papillary projections of fibrous tissue covered by epithelium extending into cysts; small cysts lined by several layers of epithelium. From these findings they conclude that their specimen represents a multilocular cystadenoma. As factors in the further growth of the cysts they consider decomposition of leucocytes, colloid degeneration of the proliferated epithelium, exudation or transudation, and retention of secretions.

Von Kahlden corroborates the above findings. He saw solid masses of deeply staining cells projecting from the tubules; some of these cell-masses showed a beginning central degeneration, and he was able to follow this change to the stage of cyst formation. He regards the interstitial changes as secondary. The retention theory he considers inadequate, not only in view of the histologic findings, but also in view of the frequent complication with other maldevelopments, as cystic liver, which was present in one of his cases. Cystic kidney in the adult, he thinks, may be congenital and, not being far advanced at birth, may remain latent for many years. The same author describes also a case of cystic kidney in a new-born child. The right kidney was four times its normal size, the left not so much enlarged. The cortex in both was full of small cysts. In this specimen he found the same epithelial proliferation and cyst development from masses of epithelium. The number of glomeruli was reduced to about one-eighth of the normal and there were practically no normal tubules. On the whole, the process was decidedly cyst-adenomatous, although in places, owing to the great amount of fibrous tissue, it resembled a fibro-adenoma canaliculare.

In view of these investigations it seems certain that the cyst-adenoma theory will explain some cases both in the new-born and in the adult, the main difference between the two being that in the latter the cysts have grown larger and secondary inflammatory changes may have occurred.

A third theory of the origin of cystic kidney remains to be spoken of, the malformation theory. To appreciate the bearing of this theory it is necessary to have in mind the embryological development of the kidney. According to the most widely accepted view, two elements are concerned. On the one hand, the medullary portion, comprising the whole collecting and discharging system of the permanent kidney (metanephros), is formed from a diverticulum of the Wolffian duct, which is developed at a point just above the place where the duct empties into the cloaca. The researches of Schreiner and others on this point seem to be conclusive. The cortical portion, on the other hand, comprising the secretory system (glomeruli and convoluted tubules), is formed from the nephrotome or "nephrogenic tissue" (Schreiner), and later comes into communication with the branches of the diverticulum from the Woffian duct. It appears, therefore, that the permanent kidney is formed from the same material as the primitive kidney or mesonephros, which also has a dual origin, in part from a series of diverticula from the Wolffian duct at a higher level (more cephalad) than the special diverticulum of the metanephros, in part from the nephrogenic tissue. While the metanephros reaches its full development the mesonephros atrophies or is utilized in the building of other structures.

Most of the adherents of the malformation theory have explained the kidney cysts either as arising from actively secreting mesonephric elements which have failed to atrophy and have been incorporated in the permanent kidney, or as being due to a failure of union of some of the secretory and the collecting or excretory elements of the permanent kidney. The former view has been supported by Shattock, Sutton and others; but in view of the fact that the meso- and metanephros are homodynamic organs, according to Schreiner and others, it would seem to be impossible to identify any mesonephric rests if they should occur in the kidney, unless by some extraordinary good fortune a specimen could be secured of a particular stage of intrauterine development, in which this abnormality was being developed. The second view has found many supporters. Thus Ribbert found in some areas of cystic kidney tissue glomerular and tubular cysts, but no convoluted tubules. Rückert applies the malformation theory to unilateral as well as bilateral cystic kidneys in the adult as well as in the new-born.

The most recent important contribution to the subject of cystic kidney and liver is the previously-mentioned article by Dunger. This writer supports the malformation theory and lays special stress on an etiological factor which he thinks plays an important part, the hereditary predisposition. He describes two cases of cystic kidney occurring in the same family, in mother and daughter, the immediate cause of death in both being cerebral apoplexy. In both cases the gross and minute changes were about the same and corresponded pretty closely to what had been observed by Nauwerck and Hufschmied, Von Kahlden and others, and explained by them as cases of cystadenoma. Dunger also speaks of the clinical symptoms and the difficulty of diagnosis, which has been made only nine times. He thinks the family history may sometimes aid in the diagnosis. He finds twelve instances on record of cystic kidney occurring in two generations, which is a considerable number considering the rarity of this disease. Its occurrence in two or more children of the same parents is more frequent. Some of the most remarkable instances mentioned by Dunger are the following: Virchow's case of four children of the same mother; a case of five children of the same mother; a case in which father, son and a nephew were affected, another nephew having a double thumb; a case in which father,

son, and a sister were affected, some of the other children also having symptoms of the disease; another case like the preceding except that two sisters of the father were affected.

Dunger's most important conclusions are as follows: (1) Cystic kidney is always congenital, also when we find it in adults. At times it may be so far advanced in utero that the child cannot be delivered normally, or dies early; at times it may not reach any great development until late in life. (2) The association with other malformations and the hereditary tendency support the malformation theory. (3) The most likely explanation is either a failure of union between the two elements concerned in the development of the kidney, or an incoordinate development of mesoblast and hypoblast, as suggested by Borst. Further to illustrate his views Dunger describes two cases of cystic kidney occurring in infants. In the first, the glomeruli seemed to communicate directly with the collecting tubules, there being no evidence of convoluted or looped tubules. (This reminds us of Ribbert's case.) There was no evidence of any inflammatory or neoplastic process, and Dunger cites this as a case of cysts due simply to a maldevelopment. In this case there were also cysts of the liver, evidently due to a proliferation of bile-duct epithelium.

In the second case, there was also no abnormal proliferation of epithelium. There was a great excess of connective tissue, but Dunger does not regard this as excluding the malformation theory. The number of tubules, especially of collecting tubules, was much reduced, but glomeruli were found everywhere. Some tubules were found to have a blind ending. A great many of the cysts contained normal glomeruli. Dunger considers this case as similar in many respects to those described by Virchow as a papillary atresia, but interprets some of the findings as evidences of a malformation.

From a review of these different cases and theories advanced to explain them it seems evident that not all cases presenting the macroscopical appearances of so-called "cystic degeneration" or "gros rein polykystique" can be explained by any one of the theories advanced. This seems, however, to have been attempted. Thus the adherents of the cystadenoma theory have claimed that the inflammatory processes, *i.e.*, connective tissue proliferation, etc., when present, are secondary to an abnormal proliferation of epithelium, and the adherents of the malformation theory have considered the excess both of connective tissue and epithelial growths, when present, as secondary to or indeed as constituting a part of a maldevelopment.

Evidences of inflammatory processes which might lead to the formation of retention cysts have not been found in all cases; epithelial growths suggestive of cystadenoma have not been uniformly present; direct evidences of any maldevelopment have been found only by a few observers, perhaps because they are so easily overlooked; possibly this last theory might be the correct one in many cases. The hereditary factor has been made to harmonize with all of the three principal theories; certainly, heredity may predispose to inflammatory processes, to neoplasms, and to malformations. In short, each of the different theories seems to have found cases which admirably illustrate and justify it, while some cases present such a variety of appearances that they may be pressed into service by the adherents of quite opposite theories with equal advantage.

In regard to cysts of the liver the literature is more scant, perhaps because the process of their origin seems to be simpler or because fewer cases have been found. The cysts, except the largest ones, have generally been found to be lined by an epithelium of short, cuboidal cells like those of the bile ducts. At the same time there has been found an active proliferation of bile-ducts, and the cysts have been thought to be formed by a dilatation of the proliferated bile-ducts; in fact, the gradual transition of these bile ducts into cysts has been pretty definitely traced. Nauwerck and Hufschmied, among others, consider the process as cystadenomatous. The bile ducts proliferate chiefly interlobularly, but tend also to invade and replace the lobules. They are usually surrounded by a great deal of fibrous connective tissue, which some have considered as evidence of a true cirrhosis, while others have considered it as arising secondarily to, or coordinately with, the epithelial proliferation.

As to the etiology of these cysts we are, as in the case of the kidney, confronted by three chief theories: (1) The inflammatory theory. In objection to this theory it is urged by Still and others that neither in biliary cirrhosis nor in congenital obstruction of the larger ducts is there any proliferation of bile ducts with cyst formation. On the other hand, there is no jaundice in cystic liver, and no bile was found in the cysts by Still, Nauwerck and Hufschmied, or Von Kahlden. (2) The new formation theory, already mentioned. (3) The developmental or malformation theory, which is generally credited to Still. The excretory part of the liver is developed from a diverticulum of the intestine somewhat in the same manner as the corresponding part of the kidney is developed from a diverticulum of the Wolffian duct. Still assumes that some of the branches of the liver diverticulum fail to become differentiated into bile-ducts and, persisting, develop into cysts, surrounded by masses of fibrous tissue derived from mesoblast which failed to become properly differentiated into secretory, vascular and interstitial tissues.

Borst's theory of an incoordinate development of hypoblast and mesoblast, which he applies to both liver and kidney cysts, seems to be the same idea differently expressed. In re-

gard to the association with kidney cysts, Still in 1897 found this relationship in 35 recorded cases and added two more. Lejars, quoted by Hektoen, in 1889 found 17 cases out of a total of 63 instances of cystic kidney.

Case I.—Mrs. R., housewife, aged sixty years, died December 4, 1904, the clinical diagnosis being carcinoma of the stomach. I am indebted to Dr. Marie Olsen, who was occasionally consulted by this woman and attended her before death, for the clinical history, which, though incomplete, is quite interesting. The patient was a chronic invalid for many years. As a young woman she had multiple carbuncles of a very chronic type and was troubled with metrorrhagia. There was evidence of serious kidney lesions several years before death; pus, blood, albumin, and casts were found in the urine. The patient had consulted an oculist for rapidly failing vision; she was much troubled with vomiting; her complexion was "muddy," her breath exceedingly foul, and she was very cachectic.

She had complained for several years of distress in the region of the liver; some palpable swellings there had disappeared with some relief of local symptoms after massage (Traumatic rupture of cysts?). Swellings had also been palpated in the flanks. The patient believed herself to be suffering from cancer. A sister died some years ago, supposedly from cancer. She had presented very similar symptoms; Dr. Fenger had seen the case and had refused to operate. No autopsy was held in this case, although the patient had suggested that one should be held. The two sisters had at times spoken of their mother, who died in Germany, as having been a chronic invalid. The autopsy in the present case was held by Dr Bassoe, and the anatomic diagnosis was as follows: Cystic disease of the liver and both kidneys. Multiple suppurating cysts of the liver. Hypertrophy of the left ventricle of the heart. Edema and hypostatic congestion of the lungs. Diffuse bronchitis, chronic gastritis, uterine polypi, healed tuberculosis of the apex of the lung, localized fibrous pleuritis, corset constriction of the liver.

The autopsy record contains the following description of the liver:

"The liver is of abnormal shape, the anteroposterior diameter being the greatest. There is a constriction on both sides 10 cm. behind the anterior edge, at the points where the organ was in contact with the costal margins. The anteroposterior diameter of the right lobe is 28 cm., of the left lobe, 23 cm. The lateral diameter of the whole organ in front of the constriction is 19.5 cm. From above downward, the greatest dimension is 16 cm. near the posterior margin. The upper surface is uneven, due to the presence of a large number of cysts, which vary in diameter from 1 to 6 cm. They are scattered over the upper surface except in front of the constriction mentioned. Most of the cysts are translucent and on section are found to contain clear fluid. A few of the large cysts are opaque and dark red with reddish-black contents. Several dozen of the smaller cysts are yellowish-white and contain a whitish fluid of the appearance of thin pus. The inner surface is also the seat of a large number of cysts which, however, occupy a comparatively small part of the entire surface, as they are much smaller than those on the upper surface, the largest measuring 2.5 cm. in diameter. Between the cysts the surface is of a light brown color with distinct lobular markings.

In section the part behind the constriction mentioned is found to be honey-combed with cysts, the largest of which is located in the posterior part of the right lobe and measures 10 cm. in diameter. It has a thin fibrous lining everywhere, and is partly subdivided by incomplete partitions. Several small cysts project slightly into its interior. Many small cysts containing a yellowish fluid are seen on the cut surface and also several apparently solid yellowish areas 1 to 2 mm. in diameter. The liver tissue proper is of a brownish-gray color, with distinct lobular markings. The gall-bladder is of normal size and contains fluid bile. There are no concretions in the gall-bladder or the ducts. The diameter of the hepatic duct coming from the right lobe is 1 cm., that of the cystic duct also 1 cm., that of the beginning of the common duct 18 mm. No communication between the hepatic ducts and any cysts is noticed. The liver weighs 1,400 gms., after the evacuation of several large cysts."

The kidneys are described as follows:

"The right kidney unopened weighs 810 gms. and measures 23 x 9 x 8 cm. Its surface is everywhere composed of translucent, bluish-gray, opaque cysts varying from 1 mm. to 8 cm. in diameter. There is a distinct hilum into which cysts project. The cut surface is everywhere honeycombed with cysts varying in diameter from 1 mm. to 5 cm. There is no distinction between cortex and medulla. Only in a few places beneath the capsule a small amount of light-grayish kidney tissue can be recognized. The capsule is very adherent and cannot be removed without rupturing a large number of cysts. A pelvis is present into which large, dilated calices open. The pelvis itself is not dilated. The fluid within most of the cysts is mixed with blood.

"The left kidney weighs 700 gms. and measures 21 x 9 x 7.5 cm. Its surface is everywhere covered with cysts, the largest of which measures 7 cm. in diameter. The cut surface resembles that of the right kidney, being honeycombed with cysts. The pelvis is dilated and possesses distinct and dilated calices. There is little blood mixed with the cyst contents. The ureters are of normal size, as is the urinary bladder."

(To be Continued.)

A COMPARISON OF METHODS OF LAVAGE WITH THE SIPHON TUBE AND POLITZER BULBS.[1]

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IN determining an ectasia or an atony of the stomach our criterion is the test of performance of muscular function as measured by residue of known food found after known periods of time. That this be accurate it is necessary that the amount obtained in the test be as nearly as possible the whole amount at the time present in the stomach. All agree that the recovery of this whole amount is difficult and often not accomplished, especially in the very group of patients in whom it is particularly desirable.

To meet this difficulty by the method of expression commonly used, various modifications have been proposed. Aspirators are numerous, and yet in the popular forms much gain in efficiency can hardly be claimed. Neither Fridlieb's, Boas' nor Straus' exerts more than an interrupted or slight aspiration. The application of a Politzer bag recommended by Ewald, arranged by Kuttner with a hard rubber connection piece, separable for convenience, is the most efficient simple form of aspiration.

The fact that the expression method leaves something to be desired even for the withdrawal of test meals is shown by Fleiner's recommendation, endorsed by Riegel, to have the patient, after expression in the sitting position, lie down for the purpose of obtaining a further quantity likely to be gained after all possible has been expressed by the atonic stomach in the upright body position. It needs but trial in a few cases to convince the investigator that a considerable amount can be withdrawn by the bulbs after all possible has been expressed in the sitting and reclining position.

As examples of the comparative efficiency of expression and aspiration of these bulbs I give a few figures of a trial made on the following plan. They can be multiplied indefinitely but are simply illustrative. In the first trial the patient, thoroughly used to expression and use of the tube, with a considerable motor insufficiency, four hours after the breakfast gave 95 c.c. by expression, and a further quantity of 40 c.c. was obtained by the bulbs. (Expression in the sitting and lying position.) An error of over 30 per cent. is possible by the expression method.

In the second example the patient used to expression and the bulbs, afforded 5 c.c. of thick mucus by the expression in sitting and lying position and 35 c.c. in addition was withdrawn by the bulbs. In this case but 12.5 per cent. of the recoverable stomach contents was obtained by the expression method, and this case also illustrates the advantage of the bulbs in the case of the tenacious mucus of the catarrhal process, in that much shorter tubes afford less opportunity for retarding the flow from the stomach by adhesion of the mucus to the walls of the tube.

The third example is that of a patient considerably used to the tube in whom 60 c.c. was obtained by expression in sitting and lying position, and the use of the bulbs with manipuation gave 20 c.c. additional. In this case 75 per cent. of the stomach contents was recovered by expression.

What is found in practice with the siphon expression in recovering food residue applies also to its use in lavage. In the ordinary sitting position and also in the horizontal position siphoning and expression permit in many cases considerable quantities of water to remain in spite of all reasonable effort. In upright positions the cardiac portion of the stomach often escapes the washing undertaken. Thorough cleansing of the stomach surface is accomplished, if at all, in considerable time and with fatigue to the patient. This thorough cleansing is often not obtained, especially when there is a catarrhal secretion of the membrane. The water goes into the stomach from the tube and back with little motion or current to perform the mixture necessary to establish the cleansing desired. These difficulties are overcome with ease for the patient, thoroughness in the result, speed and satisfaction to the physician or nurse, by using the bulbs for lavage as well as for aspiration of test meals, with manipulation of the stomach, shaking and mixing the solution used with the stomach contents, and later, upon the thoroughly cleansed mucosa.

I use the simple Politzer bulb with the glass connection fitting into bulb and tube. An empty bulb and two or three filled with solutions which are to be employed in succession as desired by the one giving the treatment, are provided. I find it most efficient to have the patient always in the reclining position, clothes thoroughly loosened. The food residue having been aspirated as completely as possible with an empty bulb, a bulbful of solution, medicated as desired, is introduced slowly into the stomach, and free, active manipulation of the anterior abdominal wall over the region of the stomach is used with sufficient energy, sometimes also shaking the posterior surface of the stomach, especially in conditions of atony or ectasia without ptosis. By this is produced a considerable movement of the liquid within the stomach useful for thorough cleansing and bringing the drug in close contact with the cleansed membrane. Then I allow the contents to be withdrawn in the aspirator which has been controlled by pressure with the hand till this time, and cleansing of the viscus can be accomplished more thoroughly, in less time, with less fatigue to the patient, than I can accomplish it by the use of the siphon tube. That the whole quantity used as a wash is withdrawn is seen by the filling of the bulb. The patient is freed from efforts at

[1] Read before the American Gastro-Enterological Association, New York, April 24 and 25, 1903.

expression, and lying as quietly relaxed as possible gains much in comfort.

With reference to the thoroughness I would call attention first to the recognized fact that frequently after the water is obtained clear in ordinary lavage there will sometimes be a marked rush of apparently pure food residue which has escaped the ordinary attempt at cleansing. This difficulty I do not find in practice with the procedure described.

As to the comfort of the patient the testimony of those in whom the two methods have been tried is strongly in favor of this method as easier and more cleanly; and they emphasize the freedom from straining and the annoying gagging or retching sometimes associated with expression.

As to the possible danger of injury, it is subject to the ordinary precautions which we would use in states of active inflammation of the membrane, in conditions of gastric ulcer, perigastritis and the like, which control our application of the siphon tube. Bits of membrane, blood, etc., are not more often found in washing by this method than by expression. My judgment on the basis of five years' routine use is that by the avoidance of straining by the patient the possibility of damage from this cause is lessened.

As to convenience and cleanliness for the operator, my own experience in this respect has been confirmed by many of my colleagues and assistants who using the procedure, express themselves as highly pleased with its convenience, speed and comfort.

I wish to draw especial attention to the advantage in lavage of having the patient reclining with loosened clothes, and then making use of free manipulation of the stomach wall to secure a more thorough cleansing and the more thorough application to the mucous membrane of suitable solution chosen for direct medication. In this fashion all the solutions used may be employed with a reasonable certainty that all portions of the stomach membrane are reached in the treatment and that all of the solutions injected are withdrawn.

MEDICAL PROGRESS.

PATHOLOGY AND BACTERIOLOGY.

Spontaneous Retrocession of Osteomalacia.—The course of this disease is considered to be progressive, only to be arrested in certain cases by ovariotomy. A case reported by P. Berger (*Comptes Rendus*, March 27, 1905), was that of a boy, who in 1895, after an osteotomy for the relief of bow-legs, began to develop marked signs of osteomalacia, of which the bow-legs had probably been an initial symptom. There was a progressive softening of the bones of the extremities, accompanied by loss of mobility, pain, incontinence of urine, which continued for three years, when, in 1898, there occurred a sudden arrest in the cause of the disease. The bones of the pelvis, neck, spine, and head, were not affected by softening. Since that time there has been a gradual improvement, a return of the bladder-function, and a recovery of the use of one arm. A comparison of radiographic records showed a recalcification of the latter. During the stage of progressive evolution of the disease, the excretion of lime salts in the urine was enormous, and during the stage of arrest, the amount, although diminished, was still large. At this time the X-rays revealed a vesical and a renal calculus, although there were no symptoms pointing to these complications.

Experimental Acid Dyscrasia.—An investigation of the relationhip between acidosis and natural resistance to infection was made by M. Charrin (*Comptes Rendus*, April 10, 1905). Three series of rabbits of the same weight and health were experimented upon. In the first, injections of sodium chloride were made intravenously; the second received injections of lactic acid, while the third were left alone. A little later all of the rabbits received the usual lethal doses of tuberculin. Those that had received the lactic-acid injections were the first to die. This result indicated to the author that the presence of too much acid in the blood diminishes the resisting power of the organism. Lactic acid is not the only acid that will do this. The author sees in the recent enthusiasm for the lactic-acid cure of certain diseases, as dyspepsia, gastro-enteritis, etc., with kefir, buttermilk and other foods containing lactic-acid, a possible element of danger.

Hyperplasia of the Chromophile Cells of the Hypophysis as the Cause of Acromegaly.—The apparent lack of similarity in the pituitary changes described in cases of acromegaly, the absence of evidences of acromegaly in instances of marked disease of the hypophysis from syphilitic and other chronic inflammations of the granulomatous type, the contradictory results following complete destruction or experimental removal of the gland, and finally, the occasional observation of cases of acromegaly in which the gland is of normal size and apparently not diseased, have inclined many investigators to discredit Marie's theory that disease of the hypophysis is to be regarded as the causative factor in acromegaly. It has been suggested that enlargement of the gland is secondary to enlargement of the sella turcica. D. D. Lewis (*Bull. Johns Hopk. Hos.*, May, 1905) after a careful histological study of the pituitary body in a case of acromegaly, is inclined to the view that the anatomical lesion present in the hypophysis is a hypertrophy and hyperplasia of the chromophile cells. In this view he is supported by the previous findings of Benda, who reported the histological changes in four cases of acromegaly and decided that there is an increase of the chromophile cells in the pituitary body, indicating an excessive activity of the gland. He also considers that mistakes in anatomic diagnosis account for the lack of uniformity in the descriptions of the lesions of the hypophysis associated with the disease. These statements are confirmed by those previously made by Le Count and Brooks, that many of the cases reported as sarcoma, angiosarcoma, lymphadenoma, etc., of the hypophysis are simply instances of hyperplasia or adenoma. The following pathologic conditions have been described in the hypophysis in those cases of acromegaly in which it has been enlarged and obviously diseased; *e.g.*, simple hypertrophy, twice; adenoma, seven times; sarcoma (variety not specified), five times; large-cell sarcoma, six times; cystic tumors, twice; hypertrophy and colloid degeneration; marked colloid degeneration and hemorrhage; sarcoma or glioma; spindle-cell sarcoma; cylindroma; round-cell sarcoma; glioma, adenoma with enlargement, one each. Further cases in which there have been found pathologic conditions of the hypophysis without any symptoms of the disease, are as follows: Cases of adenoma by Erdheim and Breitner; tumor (variety not specified), by Pon-

fick; simple hypertrophy by Packard; telangiectatic sarcoma by Cagnetto; sarcoma of the periosteum or dura of the sella turcica compressing the hypophysis and teratoma of the infundibulum by Benda; psammoma by Woollcombe; gumma by Beadles and Hektoen; tuberculosis by Beadles; and sarcoma by Hinsdale and, finally, a case by Bassoe in which the hypophysis weighed 5.9 gr. and another in which a small calcareous nodule was found in the gland. both without symptoms of acromegaly. Other theories mentioned by writers are (1) nervous theory; (2) theory of growth anomaly; (3) thymus theory; (4) genital theory and (5) thyroid theory. The author concludes that all these theories have met with serious objections and considers that there are many factors in lending support to the theory that acromegaly is caused by an excessive function of the cellular elements of the anterior lobe of the hypophysis.

OBSTETRICS AND GYNECOLOGY.

Technic of Operations for Uterine Fibroids.—J. R. GOFFE (*Am. Jour. Obstet.*, May, 1905) offers the following technic as satisfactory in operations for uterine fibroids. After opening the abdomen, while the tumor is *in situ*, the ovary and tube on one side are drawn up and the ovarian artery controlled by passing a ligature through the top of the broad ligament near the uterus. One end of this ligature is rethreaded and the broad ligament transfixed a second time near the tumor just above the uterine artery. A ligature having been placed near the horn of the uterus, the broad ligament is cut down to the point of transfixion, the tumor rotated, and the same method pursued on the other side. After delivery of the tumor through the wound, the lower angles of the incisions are connected by anterior and posterior oval incisions through the peritoneum covering the uterus. The flaps are dissected down, the one in front carrying the bladder and ureters into safety. One end of the original broad ligament ligature is passed inside of these flaps close to the cervix on each side and the uterine artery ligated. The tumor is then cut away on a level with the internal os, the canal disinfected with pure carbolic acid, and the flaps stitched over the stump and all the ligatures on either side. This method involves a minimum loss of blood, is easy and permits of rapid execution. Myomectomy, in the absence of definite contra-indications should always be preferred to hysterectomy. The vaginal route is to be preferred when the tumors are less than three inches in diameter. The elements of danger in operations for fibroid tumors are: (1) The wounding of the bladder, which may be carried high up by the tumor. (2) Wounding the ureter in ligating the uterine artery. The carrier should be passed downward and inward, parellel with the ureter, hugging the cervix. (3) Insufficient peritoneal flaps to cover the uterine wound in myomectomy. To allow for retraction of the tissues after shelling out the tumor, it is best to incise directly over its summit and perform any necessary trimming later. (4) Wounding the intestine in separating adhesions. Any necessary sacrifice of tissue must be at the expense of pathological mass rather than of the intestine.

Peripheral Paralyses of Pregnancy.—The peripheral paralyses of pregnancy may be divided into myopathic and neuritic. According to R. v. HOESSLIN (*Münch. Med. Woch.*, April 4, 1905), the paralysis of osteomalacia is the most important representative of the former group. The muscular changes here are not a result of the bone affection, but are probably caused by the same toxic agent. The chief symptoms are lassitude, tremor and muscular pains; later there is a tendency to the formation of contractures in the adductors of the thigh. The iliopsoas, quadriceps and the adductors of the thigh are paralyzed early, giving rise to the characteristic gait. The condition resembles very closely the juvenile form of progressive muscular atrophy, but the pseudo-hypertrophy is absent. A second form of myopathic paralysis is due to polymyositis, such as may occur under normal conditions as well as after severe puerperal sepsis. Neuritic paralyses are classed by the author as follows: (1) Traumatic neuritis puerperalis, caused by instruments, particularly the forceps, or by prolonged pressure of the head. There are a large number of cases, however, where the cause of the paralysis cannot be discovered. The nerves chiefly affected are the crural and the obturator. Severe pains often accompany the paralysis, which may last weeks or months, but usually has a good prognosis. (2) Neuritis puerperalis per contiguatem. Inflammatory processes in the pelvis will here extend downward and set up an inflammation in the nerves. This form occurs some time after the birth, and is accompanied by the signs of inflammation in the other tissues. (3) Neuritis puerperalis post infectiosa. It is a strange fact that this type of neuritis is more common after the milder forms of febrile puerperal affections than after actual sepsis or pyemia. The ulnar and median nerves are the ones chiefly involved and other localizations are extremely rare. The paralysis is typical, but in the majority of cases complete restitution sets in after several months. (4) Toxic neuritis gravidarum et puerperarum. The cause here is probably autointoxication, and in a very large percentage hyperemesis has been present or develops simultaneously. This type also prefers the median or ulnar nerves, but cases are on record where the facial, trigeminal or the optic nerve were paralyzed. In exceptionally severe cases there may be a generalized polyneuritis with symmetrical muscular atrophy of all the extremities. An important complication of this condition is Korsakow's psychosis. The prognosis depends upon the extent; in severe cases the mortality may be as high as 20 per cent. Interruption of pregnancy may seem indicated, but this is ofte.1 without avail, since the toxins also seem to form during the puerperium. Operation should therefore be restricted to those cases where the life is actually in danger.

Care of Premature Infants.—There are very few cases of the survival of infants born before the twenty-seventh to the twenty-eighth week of pregnancy. The premature baby is an undeveloped baby, the lungs contain little alveolar structure and are prone to congestion; the pulse and respiration are irregular from lack of nervous control and development. The stomach capacity ranges from 5 c.c. to 30 c.c., digestive functions are feeble, that for sugar being best developed while the amylolytic function is practically non-existent. The heat regulating centers are poorly developed, consequently extremes of temperature are dangerous. On account of the greater heat loss premature infants require one-fifth to one-fourth more calories per kilo than do normal infants, but, in spite of greater need for food, much to their disadvantage they are less able to take and digest it. In regard to the care of premature infants J. L. MORSE (*Am. Jour. Obstet.*, May, 1905) states that two objects are to be attained: To keep the baby alive, and to develop its organism. The infant should be protected from noises, bright lights, and unnecessary handling. For the maintenance of animal heat incubators and substitutes for incubators are used. Most incubators may be made to maintain a constant temperature, but none of them provide sufficient pure, fresh,

warm air. The best substitute is a crib basket, padded with cotton. The top should be covered with a blanket which reaches just below the baby's neck. The desirable temperature (90° to 95° F.) may be maintained by hot water bags or bottles, the temperature being taken from a thermometer wrapped in the baby's clothing. The temperature of the room should be 80° to 85° F. The baby should be oiled every three days, but not washed, and wrapped in a quilted gown with a hood. Absorbent cotton makes a satisfactory substitute for a diaper. The best food for premature babies is breast milk, diluted at first with one to three parts of water. Modified milk with low ingredient percentages is the best substitute for breast milk—5 c.c. should be given at first at 1½ hour intervals, the amount of milk and the intervals being gradually increased. When the infant is too feeble to take food from a nipple it may be fed with the "Breck Feeder," or a medicine dropper. When stimulation is indicated one or two drops of brandy, strychnine (1-1,000 gr.) and oxygen may be useful. Babies under two pounds usually die; the prognosis is very fair when over four pounds. A slight elevation of temperature is to be expected when the infants are doing well; those doing badly usually run a subnormal temperature. Sudden death may occur without apparent cause, hence it is never safe to consider premature infants out of danger until they are thriving under normal conditions.

THERAPEUTICS.

Iodide of Silver in Urethritis.—Considerable interest attaches to a proposal by E. H. Sitek and A. A. Uhle (*Univ. Penn. Med. Bull.*, May, 1905), to employ this in preference to the other better known salts of silver. As it is not soluble, it becomes necessary to suspend it, and this was found to be best accomplished by mucilage of quince seed. This salt is not *proprietary*, and the exact strength can be controlled better than nitrate of silver. It does not stain, and is less irritating, therefore stronger solutions can be used. The writers claim that it reduces the acute stage to a minimum and relieves symptoms very quickly. They have used it in over a hundred cases, several typical ones being reported, and its effects were particularly good in dispensary patients who cannot be treated under ideal circumstances. The drug is given in from five to ten per cent. injections, three to four times daily. It was particularly noted that the ardor urinæ subsided within the first day and the discharge disappeared well within a week. In cystitis of prostatic origin or after prostatectomy it also yielded good results.

Treatment of Basedow's Disease.—That the antithyroidin of Möbius seems to have acquired a lasting place in the treatment of exophthalmic goiter, is evident from two articles contained in the *Münch. Med. Woch.*, May 2, 1905. Glomer gave the serum internally (0.5 c.c.) three times daily, to a patient suffering from general paresis, complicated by Basedow's disease. The pulse improved at once and became slower, the goiter and the exophthalmos were less marked after eleven days, and the tremor and Graefe's sign disappeared almost completely. As soon as the treatment was stopped the symptoms reappeared. R. Durig recommends much larger doses (up to 150-210 drops daily), even though slight after-effects (headache, apathy) may appear. The rectal application is indicated where the serum is not well tolerated by mouth, but somewhat larger doses are then necessary.

Graves' Disease and Parathyroid Therapy.—James J. Walsh (*Am. Med.*, May 20, 1905) reports four cases of Graves' disease treated with desiccated parathyroids on the principle suggested by Gley, of Paris; Munk, of Berlin, and confirmed by MacCallum, of Baltimore, that it is the absence of the parathyroid glands in the neck which produce the symptoms of Graves' disease. In two mild cases the remedy seemed to produce a good effect. Walsh concedes suggestion plays a large rôle in the relief, and in one case seemed to cause an exacerbation of In two severer cases the remedy failed utterly to give relief, and in one case seemed to cause an exacerbation of the symptoms somewhat as if thyroid extract were being given. It is not absolutely certain that the parathyroid material was entirely free from all admixture with thyroid substance, though it was very carefully prepared for these cases.

Tolerance to Nitroglycerin.—According to D. D. Stewart (*Journal A. M. A.*, May 27), an excessive tolerance to nitroglycerin can be readily acquired if care is not taken to avoid a too rapid increase of the dose, hence the drug, though intelligently employed, is often of little service. He refers to earlier articles of his on the subject, and especially to a case beforementioned in *Journal A. M. A.*, in which 50 minims of a 10 per cent. solution were taken daily without any very marked effects. The best rule for giving the drug for its effects on blood pressure is, in his opinion, to administer it four times a day in dose just sufficient to produce the slightest feeling of fulness in the head or to slightly quicken the pulse. If more than this is given, an undesirable tolerance is likely to be established.

PRESCRIPTION HINTS.

Loss of Appetite.—Dr. H. C. Wood recommends for failure of appetite, weak digestion and the general debility of warm weather the following stomachic:

℞ Acidi nitrohydrochlorici ..... ℥ii
Aquae ..... ℥i½
Strychniæ sulph. ..... gr.i
Misse et adde
Tincturæ cardamomi comp... } aa, q.s. ℥vi
Tincturæ gentian. comp..... }
M. Sig. Dessertspoonful after meals in water.

Pruritus Ani.—

℞ Hydrargyri chloridi corrosivi ..... gr.½
Ammonii chloridi ..... gr.iii
Acidi carbolici ..... ℥i
Glycerini ..... ℥ii
Aquæ rosæ ..... ℥v
M. Sig. Apply night and morning.

Amenorrhea.—In women suffering from amenorrhea due to deprivation and depressing hygienic surrounding, the late Dr. Goodell, of Philadelphia, placed great reliance in the "Mixture of the Four Chlorides."

℞ Hydrargyri chloridi corrosivi..... gr.i
Liquoris arsenic chloridi ..... gtt.xlviii
Tincturi ferri chloridi..... } aa ℥iv
Acidi hydrochloridi diluti ..... }
Syrupi zingiberis ..... q.s. ad ℥vi
M. Sig. Dessertspoonful in water after meals.

For Prickly Heat.—

℞ Zinci carbonati precip. ..... ℥iv
Zinci oxidi ..... ℥ii
Glycerini ..... ℥ii
Aquæ rosæ ..... ℥viii
M. Sig. Apply locally.

For Dermatitis Venenata from Poison-Ivy.—

℞ Sodii hyposulphitis ..... ℥i
Glycerini ..... ℥i½
Aquæ ..... q.s. ad ℥viii
M. Sig. Keep constantly applied.

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REAPPEARANCE OF YELLOW FEVER.

THERE is a peculiar irony in the fact that while our sanitary authorities were so greatly exercised over a possible mote in Havana they should have been so unconscious of the beam in New Orleans.

In 1493 when Columbus landed in the island of Hispaniola he lost the greater part of his crew within a year from a disease now identified as yellow fever. From that time on, repeated and severe epidemics have originated in the West Indies, and spread with somewhat modified virulence to Central and South America, occasionally reaching the United States. The most serious epidemic which this country ever experienced was that of 1878-79, when the disease assumed epidemic proportions as far north as Tennessee.

The ignorance which prevailed at that time in regard to the etiology of the disease interfered materially with the effectiveness of quarantine. The most rigorous isolation of cases and elaborate precautions as to the disinfection of "fomites" proved strangely unavailing. Many and various theories were advanced to explain the curious statistics relating to the spread of the disease, the incongruities of which were too marked to escape notice. For instance, cases occurring among refugees in Cincinnati, Ohio, showed no tendency whatever to spread.

For years persistent efforts were directed toward discovering the specific organism, and a number of investigators, Freiere and Saranelli among others, claimed success. It was Dr. Finlay, of Havana, who in 1881 suggested that the infection might be propagated by the mosquito, but this suggestion was not worked out until nearly twenty years later, when Drs. Reed, Carroll, Agramonte and Lazear convened as a Board of Medical Officers for the purpose of studying the acute infectious diseases of the Island of Cuba. It is to the tireless patience, the devoted self-sacrifice and the inspired intelligence with which they pursued their task that the world owes its present knowledge of the etiology of yellow fever, and consequently of the means best calculated to check its ravages. They demonstrated conclusively that a genus of mosquito, the *Stegomyia fasciata*, acts as an intermediary host in the propagation of the infection. To be sure, the identity of the specific organism is still a matter of dispute, but whatever it is, the mosquito is an essential factor in its life history. Consequently, the investigations which have proved of practical value are those dealing with the *Stegomyia fasciata*.

The *Stegomyia fasciata* is essentially a house mosquito, and is seldom conveyed aerially more than 100 yards unless by strong currents of wind. It breeds in cisterns, water jars and pools. It will not feed in strong sunlight nor in the dark. It will live for 154 days or longer unless deprived of water, when it succumbs within five or six days. The distribution is general, from 36° N. to 35° S. latitude on the eastern coast of America. On the western coast it is present at Panama and Guayaquil, and probably from the latter place to Acapulco. In the United States it is found all along the coast and the low plains of all the Southern States except Maryland.

In view of these facts the prophylaxis is obvious. Its aims are twofold, namely, to destroy the *Stegomyia* and its breeding places, and to prevent those mosquitoes which do exist from becoming infected. The screening of all established or suspected cases, the abolition of open water receptacles and the draining of pools are measures which have proved effective. These should be supplemented by proper quarantine regulations. Even in the light of later discoveries, de-

tention and disinfection are still useful, not, as formerly believed, for the destruction of "germs," but in order to dispose of any infected mosquitoes which may have been transported, and to allow the elapsing of the incubation period in the case of persons who have possibly been exposed to infection. Since baggage, freight and mail matter can be a source of danger only when harboring mosquitoes, and since a period of five or six days after the packing of such parcels gives assurance that they contain no living *Stegomyia*, such matter is easily dealt with. Vessels can be considered "infected" only in the sense that they may act as a medium for conveyance of infected *Stegomyia*, and this danger is best removed by fumigation with sulphur, the insects being exterminated at the end of an hour and a half by this process.

As for cases developing during the voyage or after landing, they bring little danger to communities outside the domain of the *Stegomyia fasciata*. Within that region, however, the detention—always under screen—of suspicious cases is an item of first importance.

There is no doubt that the mosquito theory has been accepted by the medical profession of New Orleans, but it was quite another matter to arouse public sentiment to a degree that would insure its practical adoption. That the possession of this knowledge, however, creates a certain confidence among the public at large is evident by the way in which the latest outbreak is met. A slight tendency to panic, experienced in New Orleans on hearing of the visitation, promptly subsided, and there has been no attempt at general exodus such as previous epidemics have occasioned. Business progresses as usual and the authorities are dealing promptly and energetically with the situation. The continued spread of the disease thus far is doubtless due to the lack of intelligence among the inhabitants of the quarter where it has broken out. Such ignorance always constitutes a formidable obstacle in combating any infectious disease, but civilization is bound to conquer in the end, and there is every reason to believe that the scourge which threatens New Orleans will result in another notable triumph of science.

A SUCCESSFUL MUNICIPAL SANITARIAN.

A RECENT number of the Bulletin of the Health Department of Chicago contains, besides the notes on the state of Chicago's health, the farewell of the Commissioner, Dr. Arthur R. Reynolds, who has, for the last twelve years, so successfully managed the great western city's sanitary affairs. There is no one who is in a position to know the present state of Chicago's health and who has followed the course of sanitary affairs in that city during the last decade, who will not be ready to acknowledge how much Dr. Reynolds has accomplished for Chicago's health. We pointed out, over a month ago, the differences between Chicago and Philadelphia in the matter of the death-rate from typhoid fever. When Dr. Reynolds began his work in Chicago the city had a "bad eminence" in the matter of typhoid that made it Philadelphia's greatest rival. Philadelphia's mortality from typhoid fever has continued practically unabated; that of Chicago has gradually become less and less, until, during certain weeks of the past spring, when typhoid fever is so often likely to be prevalent, no cases of the disease at all were to be found in this large city. Not all of this improvement is due to Dr. Reynolds; but undoubtedly much of the inspiration that forced politicians into the recognition of the necessity for sanitary improvements of various kinds must be attributed to him.

His methods deserve study by all who have the health of large cities in trust. His main idea was publicity for the state of the city's health and the causes of disease raging at any particular moment, and through this a crusade of education that would gradually produce an enlightened public opinion in matters of municipal sanitation. His principal merit has been that he has succeeded in doing this not only without producing enmity, but actually in such a way as to band together many hitherto discordant elements in Chicago's municipal life. Above all, Dr. Reynolds has known how to secure the cooperation of the medical profession of the city and, while working with them, to lead them to more definitely practical ideas of sanitary science and hygiene and secure their coöperation in the education of the people. The Bulletins of the Health Department of the city of Chicago have come to be recognized as important documents for the spread of practical ideas in sanitary science. While the announcement of deaths usually made in such bulletins might very well seem to preclude the possibility of their becoming interesting popular reading, Dr. Reynolds has succeeded in making them valuable auxiliary documents in his educational campaign so that they have been

eagerly taken up by women's clubs and kindred organizations and widely distributed until, as Dr. Reynolds with pardonable pride proclaimed before the Sociology Club of Chicago University, two years ago, "the average Chicago citizen is more intelligent in sanitary matters than his brethren of any other city in the country, and consequently the average duration of life in Chicago has more than doubled in a single generation."

Certain features of Dr. Reynold's work seem deserving of special mention. To him more than to any other in this country is due the recent calling of public attention to the increase in the death-rate from pneumonia and the consequent endeavor to learn more about the disease so as, if possible, to prevent its widespread ravages. He emphasized the fact that pneumonia had taken the place of tuberculosis as "the captain of the men of death," so often in the Bulletin of Chicago Health Department, that sanitarians generally found themselves compelled by popular interest to take up the investigation of this important subject. It seems not unlikely that as the result of this movement we shall learn more about pneumonia in the next few years than has been learned during nearly the whole of the preceding century. It is interesting to note that while he has been insisting so much on the place that pneumonia has come to occupy in the death-rate, tuberculosis has not been neglected, and there has been, during the last ten years, a reduction of 14 per cent. in the mortality from that disease.

Perhaps the most valuable work of the late Commisioner of Health of Chicago has been done with regard to smallpox and vaccination. Just after Dr. Reynolds assumed charge of the city's health, a terrible and costly epidemic of smallpox broke out in Chicago, and seemed to demonstrate that the protection afforded by vaccination was illusory. The Health Commissioner proceeded at once to the insistence upon proper vaccination of all the inhabitants of the city. Chicago, with its heterogeneous population exposed to frequent importation of the contagion, needed to be completely revaccinated. This was accomplished in spite of discouragements of many kinds, and even direct opposition from many quarters. As a consequence, the bulletins of the Health Department of Chicago have been in a position to demonstrate in recent years with a definiteness unknown anywhere else in the world outside of the German Empire the absolute protective value of vaccination. During the past three years the collection of vital statistics and investigation of individual cases has shown over and over again that the persons attacked by smallpox were those who had not been vaccinated or in whom vaccination had been performed so many years before that its protective and immunizing value had been exhausted. Especially was it made clear that in families where all had been vaccinated, excepting the children under the school age, these were the only ones to take the disease after exposure, and they unfortunately constituted a large proportion of the fatal cases.

There is no doubt that Commissioner Reynolds has fulfilled his duty with eminent success. Chicago's death-rate, which, when he began his work, was one of the highest among the large cities of the country, is now among the lowest, if not the lowest, of them all. The mortality has been reduced over 25 per cent., while there are other large cities in which there has been no reduction in mortality during the same period, and none have had a reduction equal to Chicago's. Even above what Dr. Reynolds has done for Chicago, however, has been and will be the example of his work for the heads of departments of public health in other large cities throughout this country. It is not from Chicago perhaps that such an example would have been ordinarily expected. That it has been given there reflects all the more credit on the man who, in spite of difficulties and political friction and municipal disadvantages in a rapidly growing city, succeeded in accomplishing so much to make life more livable, health more enduring and the generation longer in the city by the lakes.

ECHOES AND NEWS.

NEW YORK.

Plan Adopted to Ventilate Subway.—Huge fans which will carry the foul air out of the Subway, allowing a fresh volume to flow in, and openings in the roof of the tunnel are the main features of the plan which is to be put in operation at once. Hundreds of small rotary fans, Mr. Hedley explains, have been put in at all the stations.

Leper to be Deported.—Said Ben Ali, an Algerian, who arrived here on July 11, in the steerage of the steamship Philadelphia, has been refused admittance by the immigration authorities and will be deported. He was found to be suffering from a disease which, after examination by several surgeons, was pronounced to be leprosy. The Algerian has been kept in strict isolation since his arrival here.

New York Hospital to be Enlarged.—Plans have been filed with Building Superintendent Hopper for the enlargement of the operating amphitheater on the top

of the east wing of the New York Hospital, in West Fifteenth Street, into a two-story edifice of faced brick, with fire-proof galleries and floors and walls of marble and tile. It is to have an ornamental skylight and cabinets for the storage of surgical instruments. The improvements are to cost $20,000, according to the estimate of the architects, Trowbridge & Livingston.

Increase in Death Rate.—The effects of last week's hot wave are strikingly set forth in the figures issued by the Bureau of Vital Statistics for the week ending last Saturday at noon. The total number of deaths during the week was 2,119, as against a total of 1,726 for the corresponding week in 1904. Of deaths due directly to the heat, there were 151, as against only eight during the same week a year ago. Intestinal troubles, more prevalent during a heated term than any other, last week caused no less than 685 deaths, an increase of 132 over the corresponding week last year. The same deadly showing is furnished by the record of deaths from heart disease. Last week there were 109 fatal cases of heart trouble, while the week before there were but 88. For the corresponding week of 1904, the record showed 70. In the matter of cerebrospinal meningitis the hot spell seemed to be beneficial, the number of deaths from that disease being but 22 during the entire week ending last Saturday. The percentage of deaths was 28 in 1,000, as against but 23 in 1,000 during the same week in 1904.

Ignorant Mothers Taught.—In the wake of the torrid weather of the past week, there have come to the knowledge of the doctors and nurses of the Sick Children's Mission of the Children's Aid Society scores of instances of sickness and deprivation. The timely calls of the physicians and nurses of the society since their work began in June has resulted in the saving of the lives of many young babies, who were discovered to be suffering from ailments incident to the season and from the effects of improper diet. The visitors find the greatest ignorance on the part of the mothers in regard to the feeding and care of the young children. In numerous instances the doctors have found that the mothers permit their children to eat freely of cucumbers and decayed fruit. The Sick Children's Mission is putting forth every effort to teach these mothers in the so-called foreign quarters a better way, while giving the necessary medical treatment and nourishing food to the helpless babies. To meet the demands of this work, funds are needed. Checks may be made to the order of A. B. Hepburn, treasurer, and sent to No. 105 East Twenty-second Street.

City's Poor Ambulance Service.—A paper by Nathan Bijur was read at Portland, Ore., before the Thirty-second National Conference of Charities and Corrections on New York's inefficient ambulance service. He advocates the appointment by the Mayor of a commission to investigate the subject, and proposes as a temporary solution of the problem the establishment of a central ambulance bureau, to be connected with the Police Department, which can receive and record all calls, and, in harmonious working with the hospitals, provide for the promptest service possible under the circumstances. Mr. Bijur holds up New York's Fire Department as a means of comparison to show the marked deficiency in the city's really serious effort to render first aid. He called attention to the irregular disposition of the hospitals over the city, there being an entire absence of any geographical plan or method in their location. The expense involved in the establishment and maintenance of an ambulance service is no excuse for its absence or incompleteness. The cost of an ambulance, with two horses (for relays), harness and equipment, appears to be between $1,000 and $1,200. The cost of annual maintenance is about $1,000, exclusive of rental of station, and assuming the services of the surgeon to be gratuitous, or at least to be included in the general expenses of the hospital or similar institution to which the ambulance is attached.

PHILADELPHIA.

License for Recent Graduates.—As a result of the examinations held less than a month ago, 51 of the applicants were given licenses to practise medicine. Of the 36 homeopathic graduates who took the examination every one passed, while 4 of the 19 eclectics failed.

Honored by Edinburgh University.—While attending the quater-centenary celebration of the Royal College of Surgeons, at Edinburgh, Dr. W. W. Keen, of Philadelphia, and Professor of Surgery at the Jefferson Medical College, received the honorary degree of Doctor of Laws at a special graduation ceremony of the Edinburgh University. In an address he paid a glowing tribute to the Edinburgh University, which, he said, "the Transatlantic graduates regard as their academic Jerusalem."

Consumptives Barred from Attending Church.—Rumors are current that the council at White Haven, Pa., proposes to pass an ordinance which is to prevent patients suffering from tuberculosis from attending church in that town. The ordinance, it seems, is a blow aimed at the patients of the Free Hospital for Consumptives. Dr. Lawrence Flick, president of the institution, believes that such action would be the height of folly, and, in his estimation, could not be enforced, since it is a restriction of personal rights, which is unconstitutional. Dr. Flick believes there are tuberculous patients in White Haven who are not inmates of the sanatorium, and who are dangerous because they do not comply with the rules laid down for treatment in the institution.

Heat Increases the Mortality.—As a result of the prolonged hot weather, the deaths in the city numbered 608 last week, whereas during the previous week but 548 died. The weather spent its greatest effect upon children and upon the aged; of the 608 deaths, 233 were children. Insolation was responsible for 19 deaths. The greatest surprise is the evident increase in the death-rate of typhoid fever. During the week just ended 108 new cases were reported and 18 deaths occurred, whereas during the proceding week but 12 patients died. Of the cases of contagious diseases reported 21 were diphtheria and 13 scarlet fever. As has already been pointed out in this column several times, the greatest number of typhoid cases are from wards which receive water directly from the Delaware River.

CHICAGO.

Rabies.—One death from this disease is reported to have occurred at the Presbyterian Hospital on July 8. The victim was bitten by a pet dog at his home in Russell, Ky., and did not receive medical attention until too late.

Appointment of Dr. Reynolds.—Dr. Arthur R. Reynolds, until the Dunne administration Commissioner of Health of Chicago, will leave this city on August 1 for French Lick Springs, Ind., where he has been appointed resident physician and director of Thomas Taggart's Hotel.

Departure of Dr. Senn for Northern Latitudes.—Dr. Nicholas Senn, of Rush Medical College, is to have a taste of Arctic travel, and, it is said, a

share in the Peary expedition, although he will not attempt to reach the Pole. He was a passenger on the Arctic steamer Erik, which sailed recently from Cape Sabine, North Labrador, which was going with coal and supplies for Peary. The Erik will meet the Roosevelt at North Star Bay, and then return south early in September.

Lawn Fete Aids the Hospital.—The lawn fête given by the auxiliary association of the St. Francis Hospital at Evanston, to aid the charity patients, which closed July 20, was a financial success. All the booths were patronized liberally and the attendance was unusually large. The receipts exceeded $1,000, which was the amount the committee had determined to secure. The money will be used to aid patients of the hospital who are unable to support themselves until some permanent means can be found for providing for them. The hospital has been in existence five years, and although under strictly Catholic management, it is conducted without regard to the creed of the patients.

Public Health Matters.—According to the weekly bulletin of the Chicago Health Department, for the week ending July 22, 627 was the total number of deaths from all causes, an excess of 180 over the previous week—188, or 30 per cent. of the total, were of infants under one year of age, and 57, or 18 per cent. of the total, were of children between one and five years of age. These age periods were the greatest sufferers from the effects of the heat, and next to them was the other extreme of life—those over sixty years, which show an increase of more than 46 per cent. Directly and indirectly due also to the heat of the early part of the week are the 22 deaths from sunstroke; the 78 more deaths from acute intestinal diseases; 27 more from heart diseases; 24 more from consumption, and the increase in deaths from pneumonia. In this latter case the increase is of terminal pneumonia, or pneumonia terminating some form of chronic disease. Of the 150 deaths returned as due to intestinal diseases—an increase of 78 over the previous week—122, or 81.3 per cent. were among infants under one year old. During the week five deaths were reported as caused by tetanus, two of which were due to Fourth-of-July accidents. Ten deaths from tetanus have been reported since July 1, of which five were due to Fourth-of-July accidents.

GENERAL.

A New Anesthetic.—Two German scientists announce in the *'Deutsche medicinische Wochenschrift* the discovery of a new anesthetic having all the virtues of cocaine without its secondary ill-effects. The new substance is called "Allypine." It deadens pain by local application and does not contain poison.

Dental Congress at Portland Fair.—The Lewis and Clark Dental Congress began a four days' session July 18, with more than 300 members of the profession in attendance. Eight Western States were largely represented, fifteen States in all sending delegates. There were also dentists present from Singapore, Honolulu, Canada, New Zealand, and Alaska. The officers of the Congress are Dr. Norris R. Cox, President; Dr. Arthur W. Chance, Secretary and Treasurer.

Honored at Edinburgh.—At a special graduation ceremony at Edinburgh University on July 22, the honorary degree of doctor of laws was conferred on Ambassador Paul Cambon, Prof. William Stewart Halsted, surgeon-in-chief of the Johns Hopkins Hospital, and professor of surgery in the Johns Hopkins University of Baltimore; Prof. I. H. Cameron, of Toronto; Prof. F. J. Shepherd, of Montreal, and Prof. William Williams Keen, professor of surgery, Jefferson Medical College, all of whom were attending the celebration of the quater-centenary of the Royal College of Surgeons.

For Mosquitoes, Maryland.—Thoroughgoing investigation of the mosquito, its haunts and its habits, which has been in progress for some time under the direction of the scientific department of the Johns Hopkins University, has resulted in the discovery officially announced by the Hopkins authorities, that Maryland has the largest mosquitoes to be found in this country. No exception is made of New Jersey. The Maryland mosquito is positively pre-eminent for size and ferocity. The investigation also shows that Maryland breeds specimens of almost every kind of mosquito, including the malaria-breeding kind.

New Hospital for East Boston.—An emergency hospital is now assured for East Boston. Mayor Collins affixed his signature July 24 to the order which passed both branches of the city council unanimously, providing for an emergency hospital in that section of the city. The order calls for an appropriation of $30,000, and to this amount is added about $11,000, the bequest of the late Ann E. Taggard, who stipulated in her will that the money should be used for hospital purposes in the East Boston district. The proposed hospital is to be built under the supervision of the trustees of the City Hospital.

Gen. Wood's Illness.—Gen. Leonard Wood, who was recently operated upon at St. Margaret's Hospital, Boston, is progressing so well that his family now expect him to be at his old home in Pocassett in a few days in comparatively good health, and ready for a trip back to his post in the Philippines. The exact cause of Gen. Wood's trouble was made public for the first time. It is exostosis of the head; an abnormal growth of bone or bony tumor upon the skull. The cause was a blow upon the crown of the head, sustained about a year ago. The operation was performed on July 5 and was entirely successful.

The New Jersey Village for Epileptics.—The seventh annual report of the New Jersey State Village for Epileptics just issued, reports that the general health has been good and the inmates seem to be happy and contented. Epileptic seizures are reported by cases, giving the number in so many months, and a large decrease is shown in the year ending November 1, 1904, over the number of the preceding year, the monthly average being, for males and females, respectively, 307 and 245, as against 366 for each sex the previous year, this notwithstanding the increased number of patients. There are 93 inmates, six having been discharged and three having died during the year. New buildings are progressing, appropriations having been made by the last legislature, and the capacity of the village will soon be considerably increased. It was expected that by July 1, there would be room for 300 patients. Plans for original investigation of the malady and for more complete scientific treatment, are pending.

All Should Live 100 Years.—Sir James C. Browne, the author of various works on mental and nervous diseases, in an address to the Public Health Congress in London, declared it was a good working hypothesis to regard the natural life of man as one

hundred years. He did not agree with Prof. Osler and others that the world's effective, vitalizing work was done between the ages of twenty-five and forty years. Much of the world's best work, he said, had been done by men over forty years of age. If the world were deprived of their work it would go back to the twilight of ages ago. Every child should be brought up impressed with the obligation of living to a hundred years, and should be taught to avoid irregularities in living which tend to prevent the attainment of this ambition. While it was certain that a century of health and vigor could be attained, it could only be reached by faithful obedience to the laws of health and simplicity and tranquility in living.

St. Louis Skin and Cancer Hospital.—On July 1 the St. Louis Skin and Cancer Hospital opened its doors for the reception of patients. This institution, situated on the southeast corner of Jefferson and Charles streets, consists of a completely equipped hospital of forty beds, and an outpatient or dispensary service. As the title indicates, only skin and cancerous diseases will be treated. The institution is founded upon the idea of research in cancer and allied types of malignant diseases. A pathologist, who will devote all of his time to the needs of the hospital, has been appointed, and he will conduct such scientific investigations as the opportunities of the hospital and clinic will permit. The medical staff of the institution will also, especially, direct their efforts to scientific endeavor. A training school for nurses, partaking of the character of a postgraduate school, has been established in connection with the hospital. Daily clinics for outpatients will be held. The institution is to be free of charge to all patients enjoying its benefits. Inoperable and incurable cancer cases, as well as the more hopeful ones, will be admitted to the hospital; the Society expects, in the near future, to have a home, situated somewhere in the suburbs of the city, for the former cases. The following medical staff has been appointed: Dr. G. Baumgarten, Dr. N. B. Carson, Dr. J. R. Clemens, Dr. M. F. Engman, Dr. A. E. Ewing, Dr. E. C. Burnett, Dr. W. E. Fischel, Dr. Frank R. Fry, Dr. George Gellhorn, Dr. John Green, Dr. John B. Keber, Dr. F. J. Lutz, Dr. Guthrie McConnell, Dr. H. G. Mudd, Dr. Greenfield Sluder, Dr. J. B. Shapleigh, Dr. Ellsworth Smith, Jr., Dr. Justin Steer, and Dr. Fred Taussig.

Boston's New Affliction.—About five years ago Malden, Medford and Everett were invaded by the brown-tailed moth; this insect, much more active and vigorous than its rival the gypsy moth, has spread in a remarkable fashion so that now very few of Boston's suburbs are free from its ravages. Along with the reports that many fine trees had been killed and the beauty of avenues destroyed, have come from time to time, chiefly from among those engaged in fighting this pest and the inhabiatnts in the affected districts, complaints of a very troublesome and painful rash, occurring usually on the exposed parts of the body at that time of the year when the moths were in the caterpillar stage. At first no cause could be assigned for this trouble, but now it is definitely known that it is these caterpillars who are to blame. Until recently very few of such cases have reached the city dispensaries and it was not until this year that many Boston physicians have come actively into contact with this condition. This season, however, the army of beautiful white moths invaded Boston itself, caterpillars have abounded on roads, sidewalks and trees, so that almost every one in the town has had an opportunity to learn from personal experience what the brown-tailed moth rash is like. The caterpillars hatch out in the early spring and again late in August; they are plentifully provided with stiff, many-pronged hairs which are apparently but loosely attached and, set free by the slightest force, are thrown into the air. These fall on the arms, face and neck of unfortunate individuals and also on wash hung out to dry, so that the rash may be found on any part of the body. The rash itself is usually localized in the form of many discrete papules, intensely painful and itching, lasting from one to two weeks. Most cases require no treatment beyond the simplest of home remedies, but some are reported from Newton where the eruption was general, the eyes closed, and hospital treatment necessary. The complaint is a very real one and, although the entire subject has been the source of many jokes, to the one afflicted it is no laughing matter.

OBITUARY.

Dr. CURTIS HARVEY BILL, of Bridgeport, Conn, aged seventy years, a leading physician of Fairfield county, died July 24, from the effects of an abdominal operation performed the preceding Tuesday at St. Luke's Hospital, New York. He was a native of Tennessee, but had resided in Connecticut since the Civil War, in which he served as a surgeon.

Dr. H. J. SCHIFF, of 117 East Seventy-ninth Street, New York, dropped dead on the steamboat pier at Alexandria Bay on July 24. He was on his way to Ogdensburg, to attend the State convention of the Knights of Pythias.

Dr. JOSEPH BURR BENNETT, who was one of the oldest homeopathic physicians in Brooklyn, died on Sunday at his home, 198 Columbia Heights. He was born at Saugatuck, Conn., eighty-nine years ago, and came of Colonial stock. He began practising as a physician in Brooklyn sixty years ago. For the past twenty years he had devoted himself to the care of his property. Dr. Bennett leaves six children.

Dr. ANNA FRANCES DONOGHUE died on the morning of July 20, at her apartments in the Grenoble Hotel. She had suffered from heart disease for some time, and had predicted that death would come, as it did, while she slept. Dr. Donoghue was born in Newburgh, N. Y., in 1873. She was graduated from the Albany Normal School in 1888, and shortly afterward entered the New York Medical College for Women, from which she was graduated in 1894. Dr. Donoghue was a member of the Eclectic, Rainy Day and Minerva clubs. She is survived by two brothers, Joe Donoghue, and James Donoghue, a detective of the West Forty-seventh Street police station.

Dr. BENJAMIN EDGE died at his home in Jersey City, July 25. He was born May 17, 1851, and was sent to London, where he received his early education at Clapham College. Returning, upon the death of his father, to this country, he completed his medical studies at Bellevue Hospital, receiving his degree in 1878. In 1884 Governor Abbett appointed him a member of the State Council of Charities and Corrections. In 1901 Governor Voorhees made him a member of the State Reformatory Commission. His grandfather, Isaac Edge, came from England, and built the fourth house erected in Jersey City.

CORRESPONDENCE.

"PULSE IN VERBAL RHYTHM."

Editor of the MEDICAL NEWS:

DEAR SIR: In the current number of *Poet Lore* there is an article on "Pulse in Verbal Rhythm," which contains a suggestion calculated to be of great interest to physicians.

The article is by Mme. Mary Hallock, the pianist, and deals with the clock time rates which can uphold the feeling and not distort the form of poetry. It is demonstrated that the scope of speed covered is coincident with that of the pulse considered in its cycle of general and individual variation.

The physiological explanation suggested is that the mechanical jutting out of the arterial walls with every heart-beat jostles the network of nerves which surround them to urging a compensating action. This is the more readily to be believed when one keeps in mind the fact that these time rates are palpably not necessary, but are born of habit bred from unremitting suggestion. The mechanical energy refered to is that which grows out of the check given to the arterial flow by the capillary system.

All physiologists know the stimulus is no slight one. The same writer has elsewhere hinted that it may have indirectly helped to develop many of the larger one dimensional rhythms within the body—the regular movements of the viscera, for instance.

Another interesting point is made that the form of the heart-beat, the "lub dup" of the expansion and contraction, is precisely in point of time the "short long" which constitutes two-thirds of all English poetic rhythms, as well as much zoological rhythm besides. A guinea-hen's cackle, for instance, has the honor of being couched in as perfect iambics as Shakespeare's pentameters.

The parallelisms drawn throughout the article open up a wide field for speculation.

Very respectfully yours,

JOS. R. BAIRD.

1424 Master Street, Philadelphia, Pa.

SOCIETY PROCEEDINGS.

THE AMERICAN MEDICAL ASSOCIATION.

Fifty-sixth Annual Meeting, held at Portland, Oregon, July 11, 12, 13 and 14, 1905.

SECTION ON SURGERY AND ANATOMY.

SECOND DAY—JULY 12TH.

(Continued from Page 189.)

Penetrating Wounds of the Abdomen.—Dr. R. Winslow, of Baltimore, Md., dealt particularly with military wounds, and stated that stab wounds are not as serious as gunshot wounds. He gave some of his personal experiences in civil practice with the results of treatment.

Dr. Cooper, of San Francisco, spoke of his experience with abdominal wounds as observed in the South African war, and called attention to the prognostic importance of an empty stomach at the time of injury.

Dr. McRae, of Atlanta, Ga., described a method of treating gunshot wounds of the abdomen, and called attention to the danger in cases where the intestine was separated from the mesentery. He was not in favor of using gallons of water to flush out the abdominal cavity after injury.

Dr. Winslow, in closing, believed that some cases should be drained, although where there had been but little contamination he did not think so.

Abdominal Crisis Caused by Meckel's Diverticulum.—Dr. Miles F. Porter, of Ft. Wayne, Ind., said that within a period of a few months there had occurred in his practice four cases of Meckel's diverticulum. In one the diverticulum caused no trouble. In the other three it was the occasion for the operation. This paper was based upon this experience, coupled with a study of reported cases (149), together with 35 cases hitherto unreported. The chief object of the paper was to add to the practical aspect of the subject. The author claimed that: Meckel's diverticulum is a fetal remnant which should but does not always disappear by a process of involution. It is present in from one to two per cent. of all individuals. It is the cause of intestinal obstruction in six per cent. of all cases. Meckel's diverticulum, when present, is a greater menace to life than is the appendix vermiformis. Of the cases tabulated, it caused obstruction by band in 101 cases, volvulus in eight cases, intussusception in twenty cases. Diverticulitis was the cause of crisis in seventeen cases, prolapse of the bowel in two cases, typhoid perforation in five cases, traumatic perforation in one and tuberculous ulceration in two cases. The diverticulum was the cause of trouble in hernia in twenty cases. It was most frequently found in umbilical hernia. One case of stricture of the gut by superinvolution of Meckel's diverticulum is reported by Maylard. Duplication of the intestine may be caused by Meckel's diverticulum. Cysts are rare, but do occur, and may produce gangrene of the bowel by traction. Illustrations were shown showing some of the numerous ways in which diverticula cause trouble. Crisis caused by Meckel's diverticulum is most apt to manifest itself as bowel obstruction or peritonitis. In 118 cases obstruction was complete and in seven incomplete. In seventeen cases there had been previous attacks of incomplete obstruction. In one case (McArthur's) the appendix vermiformis was gangrenous, because of strangulation due to Meckel's diverticulum acting as a band. Diverticulitis is likely to be diagnosticated as appendicitis. Trauma is probably a frequent cause of crisis, due to Meckel's diverticulum. Symptoms are not distinctive, and a correct diagnosis is hardly possible, nor is it necessary. A working diagnosis can be, and should be, made early. Mortality in these cases is extremely high, and is due largely to delay in operation. A Meckel's diverticulum, when met with, should be removed, whether it is causing trouble or not. It should be excised, rather than inverted, using a purse-string or Lembert suture to close the opening, owing to its size and relation to the gut. The reports of 184 cases were appended to the paper.

Dr. Jepson, of Iowa, expressed surprise that the condition was not found more frequently, and although he has been examining for the past two years every operative case he has not discovered any.

Dr. Goldspohn, of Chicago, spoke of the author's reference to the predominance of the condition on the left side and he believed it could probably be explained by the difference in the circulation of the two sides, the same as do the gynecologists.

Phlebitis, Following Abdominal and Pelvic Operations.—Dr. A. H. Cordier, of Kansas City, Mo., stated in this paper that inflammation of the saphenous or femoral vein following abdominal and pelvic operations, while of rare occurrence, is met with sufficiently often to be of much interest to surgeons en-

gaged in this class of surgery. Anatomical peculiarities of the left common, external iliac and femoral veins have been advanced as a cause of the left side so frequently becoming the seat of a phlebitis. That the left saphenous vein is the vessel most frequently involved is true, but why this vein should be the one most often affected has not been thoroughly settled. Numerous theories have been advanced, but none of them, to me, are tenable. Phlebitis of these veins follows operations performed in other parts of the body than the abdomen, as the following cases may incidentally illustrate: That the left femoral and saphenous veins are chosen fields for bacterial colonization no one will doubt after analyzing the location of the phlebitis in a large series of cases. Dr. Cordier is firmly of the opinion that these germs reach these selected points through the blood, after traversing the heart, lungs and arteries, and thus reach the walls of the veins, and that the thrombus, when one forms, is formed as a secondary process. If the walls of the vein receive the infection from the venous blood, thrombi would form earlier in the process of the inflammation, and the disease would be of more serious character in as far as permanent injury to veins is concerned. If the disease of the vein proper is secondary to the thrombus formation, as some authorities claim, there must be some anatomical arrangement favorable to the development of a thrombus in the left femoral and internal saphenous that does not exist in other veins of the body. He does not believe that the cause is to be found in the general circulation alone, the walls of the vein are primarily attacked, hence the agent producing the phlebitis must reach the vessel's walls either through arteries, lymphatics, or, if in the venous circulation, there must exist in this left vein a want of resistance to bacterial invasion that is not found in the right leg.

Isolated spots of infection of the affected vein are frequently noticed, those farthest away from the body appearing last in most instances. From this fact multiple thrombi may form in the vessel. Most of the French clinicians believe that the process is primarily an infection of the venous walls. Maurice Richardson believes that it is especially liable to follow operations in the pelvis of anemic patients, and that the disease is aseptic in its origin and in its course. In the rare instances in which the disease begins in the right leg it almost invariably will attack the left also. It was maintained for a long time that the infection in phlebitis was transported by the white corpuscles to a thrombus already formed. The infection of a femoral vein following an abdominal operation does not appear to be one of extension by continuity from the pelvic structures. In reviewing the cases he found that about 30 per cent. followed operations for the removal of the uterus for fibroids.

Pelvic Operations.—In all hysterectomies (abdominal) many ligatures are used and much tissue is compressed (later becomes necrotic), a septic cavity (uterine) is opened, and no drainage put in. The conditions left in pelvis are favorable for the development of a mild type of infection (local and constitutional) from site of "tied off" tissues. This would naturally occur about ten days or two weeks later. In vaginal operations (rarely followed by a phlebitis) the same structures are constricted, but here we get good drainage and Nature is not compelled to take care of the infected and necrotic tissues by absorption. For instance: Take two patients who are in identically the same general run-down condition; in one nature is loaded down with disposition of pedicle tissue and mild infection; in the other drainage relieves her of this added responsibility. In pyosalpinx and other suppurative processes in the pelvis an immunity has been established in the patient, so that at the time of operation she is not likely to become generally septic, many of these operations being followed by drainage. In most of my cases the first symptoms of this complication have developed in the second or third week following the operation, regardless of the character of the case operated on. If there has been any difference at all, the phlebitis has followed operations for the removal of seemingly aseptic growths, as uterine fibroids, cirrhotic ovaries and internal operations for appendicitis. It would look as though the infection was either introduced through a defective aseptic technic or was due to the absorption of the pedicle at site of the operation. To the latter theory I am disposed to lean, but this does not explain why the left vein should be most frequently involved, even though the operation was performed on the right side, as in the case in appendicitis, common-duct operations, and right oophorectomy. Some of the postoperative pneumonias are undoubtedly due to infected emboli carried from inflamed and thrombotic veins. A more fatal condition may be brought about by an emboli in the brain from the same source. Massage should not be used in the early history of the disease, for fear of dislodging fragments of a thrombus, and thus cause embolic, pulmonary or cardiac symptoms of an alarming character, or even sudden death. A patient suffering from a phlebitis should avoid all undue or violent exertion, as the detachment of a fragment of a thrombus may result in a fatal embolic injury of a cardiac or respiratory center in floor of a fourth ventricle or a multiple infection of lung or other remote organs. The acute symptoms of a phlebitis usually disappear within a few weeks under proper management, while the late history is one of a tedious recovery and the use of the elastic stocking extending over a period of months, and sometimes years. Elevation of the affected limb and bandaging it loosely and keeping it moist with witch-hazel or other cooling lotions constitutes the local treatment for the acute phlebitis. The administration of cathartics and tonics completes the treatment of ordinary cases. Later massage and the use of an elastic stocking may be necessary.

Anaerobic Cellulitis.—Dr. J. Clark Stewart, of Minneapolis, Minn., stated that, clinically, anaerobic infections have interested the medical profession since early times, as shown by the older writings. Pasteur, in 1887, made the first step toward scientific study. William Welch, in 1891, first isolated the true cause of gas infection, the *Bacillus aerogenes capsulatus*. Since this time 61 cases of surgical gas infection have been reported, with two cases being personal, and six from literature not previously collected. Personal cases, one following extravasation of urine in a patient aged seventy-one years, which recovered after free incisions, irrigation with peroxide hydrogen and wet dressings. A second case of gunshot wound died the fourth day of acute gas infection. Both cases were positively diagnosed bacteriologically. An analysis of the causation of the observed cases shows that the most prominent causes were compound fractures and bullet wounds. In all but seven of the 61 cases the disease was preceded by traumatism or surgery. The

general mortality is a little over 55 per cent., and this holds true of the mortality after compound fractures and bullet wounds. Welch has shown that the gas bacillus is very widely distributed in nature, hence gas infections are likely to be not uncommon. Gas infection from other germs is extremely improbable, and such reported cases should be scrutinized carefully.

Symptomatology.—Rational symptoms vary quite widely in the different cases. The one constant diagnostic symptom is the presence of the gas bacillus in the wound secretions, usually accompanied by emphysema of the tissues surrounding the wound of entry. Smear preparations from the wound are the most important means of early diagnosis.

Treatment.—All suspected wounds should be thoroughly cleansed, best by carbolic acid and alcohol. After diagnosis the infected area should be laid wide open by multiple incisions, and treated by continuous baths, or by irrigation and wet dressings. The use of peroxide hydrogen is theoretically indicated, and seemed of great value in one case reported. His conclusions were as follows: (1) Gas bacillus infection, while not a common disease, demands the attention of all surgeons, because, while regularly fatal when untreated, its early diagnosis is easy, and its successful treatment requires only the prompt and thorough application of well established surgical principles. (2) Either removal of entire disease by amputation or thorough exposure of its site to air and drainage seem the essentials to be attained. (3) Free incisions, the continuous bath or irrigation and wet dressings have afforded the best results, and, theoretically, hydrogen peroxide is indicated.

THIRD DAY—JULY 13TH.

Extrophy of the Bladder Successfully Treated by Peter's Method.—Dr. Harry M. Sherman, of San Francisco, discussed Peter's extraperitoneal method. He compared it with Maydl's intraperitoneal method, particularly with reference to the ease of technic and the more brilliant results of the former. He said that there was urgent need for a specially constructed ureteral catheter during the operation, and pointed out a number of the dangers resulting from its use following the operation. He claimed that primary closure was preferable, although secondary closure might prove satisfactory. In conclusion he reported at length the history of a patient upon whom he had operated by this method.

Dr. E. A. Wells, of Hartford, spoke of two operations performed by Dr. Hartley, of New York, one for exstrophy of the bladder and the other for chronic tuberculous cystitis. Both operations were successful. He advised great care in the use of the ureteral catheter, and advised a technic that would permit of the doing of an operation which would preclude the opening of the peritoneal cavity.

Dr. L. L. McArthur, of Chicago, spoke of certain experiments made on lower animals by Dr. Peterson, of Ann Arbor, and Dr. Martin, of Chicago, in which they tried to implant the ureter into the rectal wall in such a manner that fecal infection could not result. He said that as a result of their studies it had developed that the fecal masses tended to empty the ureter by a suction or milking action, and thus the danger of an ascending pyelitis was entirely avoided.

Dr. Sherman, in closing the discussion, said that Dr. Hartley's method was nothing more than the regular Maydl operation. He spoke of a number of experiments made by Dr. Tait and himself on the transplantation of both ureters in dogs. All of the dogs died from peritonitis, and the experimentation was abandoned. The only instance in which infection from below has occurred following operation done by Peter's method was in one patient in whom Peter kept the catheter a long time. Dr. Sherman said that the operation was simple and valuable.

Tuberculosis of the Kidney.—Dr. J. Garland Sherrill, of Louisville, Ky., considered this subject worthy of more attention than has been accorded it. Kroenlein's classification of solitary and combined tuberculosis was followed. The bacillus may gain access to the kidney through the circulation, by ascending infection from the bladder prostate, etc., or an invasion may occur from an intestinal or peritoneal tuberculosis. Cases are recorded where an empyema or a Pott's disease have caused the kidney involvement. The fact must not be overlooked that genital and renal tuberculosis may occur simultaneously and independently. Any age is susceptible to this form of the disease, but it is seen most often in the young. Statistics are confusing upon the point of sex, but it would seem that there is little difference in the frequequency with which either sex is attacked. Both kidneys are affected in two-thirds of the cases where a general tuberculosis co-exists; where the lesion is limited to the kidneys in the larger number only one kidney is affected. The kidney is diseased prior to the bladder in the large majority of cases, yet the latter organ and the ureter will in time become infected. The lesion in the kidney may be single or multiple. Tubercle as seen here does not differ from that tissue in any part of the body. It passes through the same stages and extends downward in circulatory infection and upward when the infection is from the bladder. The process is slow and some years may elapse before the secreting structure is entirely destroyed. The miliary form of the affection does not properly belong to this paper, for it is not amenable to surgical treatment. Among the complications and sequelæ mentioned in connection with this affection are hydronephrosis, fistulæ connected with the stomach or other portion of the alimentary tract or with the skin. Tuberculosis of other organs is a frequent condition.

Symptoms.—The onset of the disease is insidious, an exception being the sudden onset of pain in a previously healthy patient, probably due to the obstruction of the ureter by blood clots or cheesy plugs. Pain in the back is present, varying from soreness to a severe backache, not much influenced by motion, and radiating down the side towards the bladder. Frequent urination is one of the earliest and most prominent symptoms. This, too, in the absence of bladder involvement. The urine is acid, and contains pus, blood, albumin and casts, the latter infrequently, and tubercule bacilli. Hematuria is often one of the early symptoms of the disease, and in most cases blood can be found in the urine at some time. The blood is usually equally diffused throughout the urine, but at times the hemorrhage is severe and persistent.

The size of the kidney varies, sometimes being normal and again greatly increased in size. The presence of perirenal inflammation is likely to give the impression of a tumor. The presence of bacilli in the urine is an important but not positive sign of renal tuberculosis, as Kahlden has shown their presence in the urine without pathological changes in

the urinary tract. Bacilli, with blood and pus in the urine, in the absence of a diseased bladder or prostate, would seem to be pathognomonic. On the other hand the absence of the organisms from the urine is not a proof that the kidney is sound. Hunner advises repeated daily examinations for bacteria rather than a number of examinations upon one day, and claims that the differential stain should always be used. Tubercle bacilli were found in 15 of 22 of his cases in which a note was made. Casper found them in 80 per cent. of his cases, and confirmed the nature of the germ by cultures, and with more extended time by inoculation of guinea-pigs. Kroenlein found bacilli in 17 of 31 cases. Dr. Tilden Brown claims that cultures should be made from the urine separated by ureteral catheter, and also that inoculations are of great value. The tuberculin test seems to the writer to be of value only to establish the fact that the patient has a tuberculous lesion, the location of the focus to be determined by other means. The general symptoms are those of tuberculosis anywhere; evening rise of temperature, loss of flesh, anorexia, pallor of the skin, night sweats and perhaps edema of the feet. Later, symptoms of hectic may be present.

Diagnosis.—The diagnosis is to be made by the history, general appearance of the patient, pain less severe than that of stone, and coming on slowly as a rule, dysuria, polyuria, hematuria, pyuria in an acid urine, and the presence of albumin. The demonstration of the bacilli with the other symptoms mentioned will be conclusive. The question of the advisability of catheterizing the ureter in these cases is one worthy of some consideration. There can be no doubt of its value in making a positive diagnosis, but some objections can be offered to catheterization of a healthy ureter in the presence of disease of the other kidney, the greatest of these being the danger of infecting the healthy side. That such infection is possible we do not deny, but that it occurs with any degree of frequency we are inclined to doubt. The experiments of Albarran seem to show that disease of the ureter is only produced by local infection when there is an obstruction below the infection. Hunner, in speaking of Case II of his series, says that he thinks it fair to question whether the infection was not carried up the left ureter by the catheter eight years previously. There is certainly no sufficient proof in support of this conclusion and it would seem more reasonable to attribute the infection to the same source as the one which caused the disease of the right kidney. Albarran advises a catheter in the diseased ureter as large as it will hold, thus obstructing it, and the collection of the urine from the other kidney as it reaches the bladder. When the bladder is not extensively diseased the writer considers that catheterization of the ureter is justifiable and a means of diagnosis which is without equal. This procedure offers the most satisfactory method of determining the presence of another kidney, its functional efficiency, and the presence or absence of disease in its structure. Cryoscopy of the segregated urine will prove valuable in determining the functional power of each organ. Wright and Kilmer have proposed a new method of determining the secretory power of the kidney based upon the point at which the urine will allow complete hemolysis of a standard suspension of red blood corpuscles.

Prognosis.—The prognosis is usually unfavorable, except in circumscribed disease of one kidney, which is promptly treated by operation. The gravity is increased when both kidneys are involved, and when it occurs in the course of a general tuberculosis. It is also increased when the ureter and bladder are extensively diseased, and when other foci of the disease are present in the body. While usually progressing to an unfavorable termination, the course is often slow, and years may elapse before the fatal issue. Recovery without operation is possible, but of infrequent occurrence. E. J. Ill reports several cases of apparent recovery, and Morris says that "certain well marked cases of renal tuberculosis have been temporarily or permanently benefited, and some actually cured, by a change of residence, a suitable climate and under suitable hygienic and dietetic régime." Cases are recorded where a patient lived for some years with a diseased kidney after one had been removed. The prognosis is much improved by the early partial or complete removal of a single kidney subject to this disease. The mortality of nephrectomy was given by Gross in 1885 as 40 per cent., and by Vigneron in 1893 as 20.80 per cent., operative mortality, and 38.40 per cent., general mortality. Israel places it at 18 per cent. in 1896, and Tilden Brown in 1898 at 7 per cent. Kroenlein gives his operative mortality as 5.88 per cent., and the general mortality as 29.40 per cent. The number of permanent cures is greater after complete nephrectomy, or nephro-ureterectomy, than after nephrotomy, or any other plan of treatment. Morris reports seven cases of partial nephrectomy, three of which were later subjected to total removal, while four were known to be well at considerable periods after operation. He records four nephro-ureterectomies with three recoveries and one death from hemoptysis and pulmonary tuberculosis five weeks later.

Hunner reports thirteen complete and partial operations done by Dr. Howard A. Kelly and his associates without mortality, a very favorable result.

Treatment.—We are firmly convinced that this is essentially a surgical disease when recognized while it is solitary, and only one kidney is affected, also that by conservative operation much good may result even in the later stages of the affection. In cases where operation is not accepted, or where it is deemed unwise, much good may be obtained from the measures usually employed in the treatment of tuberculosis in other parts of the organism; as good food, fresh air, suitable climate, creosote, codliver oil and some of the various tissue builders. In addition to these measures the removal of the primary focus of infection is advisable when feasible.

Dr. O. C. Smith, of Hartford, said that only after prolonged search the tubercle bacillus could be found. He collected a twenty-four-hour specimen. This he searches several times, and if the germ be not found he centrifugalizes and inoculates a guinea-pig. Cryoscopy and skiagraphy are valuable aids in diagnosis, and he commended the improved technic employed by Dr. L. G. Cole, of New York.

Dr. Maurice H. Richardson, of Boston, said that the first question to be decided in these cases is whether both kidneys were affected. A still more important problem in his opinion was whether, in the event of a proposed operation on one kidney there was a second kidney, and if so if it were eliminating properly. The only way to treat the condition under consideration, he thought, provided the integrity of the other kidney, was by total ex-

tirpation. After the removal of a tuberculous kidney, if sinuses exist that are dependent upon the tuberculous focus, he feels that the chances of a permanent cure are not worth much. In conclusion in comparison of this disease with malignant trouble he urged similar radical measures for its treatment.

Dr. Huntingdon, of San Francisco, agreed in recommending the total removal of the kidney in these cases, and referred to three patients on whom the operation had been done with excellent results. He thought that surgeons could be more optimistic in the future as regards the results of extirpation in the early stages.

Dr. C. W. Sharples, of Seattle, spoke of the importance of hemorrhage in tuberculous kidney. It might be associated, he said, with irritation of the bladder and cause painful urination, although not necessarily so. He detailed the history of a patient on whom he operated for tuberculous kidney. He died from pulmonary hemorrhage eighteen hours after operation, although evidences of any tuberculous deposit in the chest had been sought for and had not been found.

Dr. Munzen, of Wisconsin, reported having observed Dr. Mayo inject twenty drops of pure carbolic acid recently into the ureter in a case of tuberculosis of the kidney. This was done to obviate the necessity of removing the ureter.

Dr. Jacob Frank, of Chicago, spoke of the value of cystoscopy in examination of the bladder in cases of tuberculous kidney. His experience had shown him that the ureter was generally enlarged in the descending type and not the ascending type of the disease. He operates usually in two stages, and reported having opened the pleura accidentally while operating on one patient, with resulting death. It was possible, in his opinion, that death in this instance was due to the failure of the kidneys to functionate and to the presence of a stone. He also reported the history of a patient upon whom he operated sixteen years ago. He has remained comparatively well ever since, although the bladder symptoms have never subsided. He said that it is wiser if possible to make a diagnosis before the bladder had become accustomed to emptying itself so often. The bladder symptoms are then more likely to subside after operation on the kidney.

Dr. Sherrill, in closing the discussion, said that whereas it was a difficult matter to pass a catheter through an infected bladder into a sound ureter, yet he believed it could be done with safety to the patient. He thought that Dr. Mayo's method of injecting carbolic acid into the ureter provided the ureter was not very much affected was advisable at times. Dysuria and polyuria are often very early signs of much importance. Prompt search for the tubercle bacillus or for other bacteria, preferably employing many specimens, should be instituted at the earliest moment.

Treatment of Congenital Dislocation of Hip, with Report of Cases.—Dr. Park Weed Willis, of Seattle, described in full his method of reduction by gentle repeated manipulation. He said that he resorted to open incision only when, after a fair trial, manipulation had failed. He changed the casts on the affected limb with comparative frequency. The result in one patient with double dislocation was anatomically perfect. In another he was unable to maintain the reduction. In this case on making an open incision the capsule was found to be adherent across a very shallow acetabulum; reduction was performed, but the limb again getting out of position reduction became necessary. In this patient an anatomically perfect result was secured, although there was some stiffness and a slight degree of abduction. He further reported the history of a case of double dislocation with poorly developed acetabular cavities. His result in this case was anatomically perfect, while in another similar one he was able to secure anterior transposition. In conclusion he gave detailed histories of two adult patients with single and double dislocation, respectively, in which he secured a good result with comparatively slight disability.

Dr. Hunkin, of San Francisco, in discussion, said that the hip should be replaced in every case by the quickest and easiest manner possible. There is no question, he thought, about the best surgical proceeding being an open incision down to the capsule, with division of the capsule and putting the head of the bone in the acetabulum, provided there was one. The great difficulty was to keep it there. The most essential part of the operation, he believed, was wearing a splint from six to ten months, and he thought that a splint which opened at the side might be worn every night, although it had to be changed during the day.

Dr. DeForest Willard, of Philadelphia, after referring to the newspaper hysteria on this subject at the time of the visit of Dr. Lorenz, spoke against Lorenz's plan of treating these cases. He was heartily in favor of Dr. Willis' procedure of gentle manipulation provided it could be performed successfully. This he seemed inclined to doubt. He did not believe that a slight improvement in a child's walking, and particularly of men, was important compared with their beginning better prepared to do their work. He reported the results of three operations performed on three of his patients last year by Dr. Hoffa, in none of whom was a very satisfactory result obtained. In commenting on the prognosis he advised great caution, and compared the acetabulum in many cases to a tea saucer, instead of as it should be, a tea cup.

Dr. Harry M. Sherman, of San Francisco, believed that Dr. Willis had accomplished a great step in advance in the treatment of these conditions if he was able to secure and maintain the reduction by the methods he advocated. He objected on general principles to the forced manipulation of Lorenz or the bloody operation of Hoffa, and spoke in favor of the open incision.

Dr. Parker, of Portland, reported the history of a woman aged sixty years and weighing 200 pounds, who had had congenital dislocation without any other discomfort than a limp. Her oldest daughter had a similar defect on the same side; her granddaughter was perfectly sound.

Dr. James E. Moore, of Minneapolis, said that the term "bloodless operation," was a misnomer, and referred to it as the most unsurgical procedure with which he was acquainted. He believed the Lorenz manipulations often left the patients in a worse condition than they were before, and said that so far as he was concerned he would advocate open incision in the future.

Dr. S. C. Baldwin, of Salt Lake City, thought the Lorenz method a very bloody one, and did not approve of the Hoffa operation.

Dr. A. J. Ochsner, of Chicago, spoke in favor of

the Lorenz methods and reported that he had seen thirty patients operated on with good results. He believed that it was a perfectly safe and justifiable procedure. The cases, however, had to be properly selected, and the operator should understand how to do his work thoroughly. Lorenz's methods were not for the unskilled man.

Dr. Willis, in closing said that he considered the open incision an unsurgical procedure. It produced, he thought, stiff joints and crippled patients. He believed that sufficient micro-organisms enter a small opening over one hip to infect and ruin both hip joints.

Ununited Fractures in Cases of Delayed Union.—Dr. Casper W. Sharples, of Seattle, Wash., dwelt at some length on the symptoms, pathology, diagnosis, prognosis and treatment of this condition. He also gave the details of a number of cases occurring in his practice with the results of treatment in each.

Dr. Martin, of New Orleans, said that improper reduction or the interposition of tissues was responsible for many cases of ununited fracture. He advised making sure that crepitis could be elicited after reduction, this being, he thought, a sure sign of bony apposition. He was opposed to a cutting operation in these cases, and said that wire suturing was not sufficient to hold the bones. He advocated the use of a staple made of piano wire. An open drainage tube, he thought, was advisable in all of these operations.

Dr. Huntingdon, of San Francisco, believed that in almost every case delayed union was due to faulty position. The X-ray should make it possible to secure proper apposition, but he did not consider that bony crepitus as a sign was enough to decide that this result had been obtained. Fractures of the shaft of the femur are particularly liable to become misplaced owing to the large size and the tension exerted by the muscles.

Dr. Harry M. Sherman, of San Francisco, thought that injuries to the arteries was the principal cause of delayed union, or non-union, in many cases. He said that he had found that the upper fragment heals alone, and the lower fragment rarely does. Crepitus, he thought, was a satisfactory sign that the bones were in apposition. The use of the X-ray in addition was highly advisable, but spoke strongly against the X-ray being used for diagnostic purposes to the exclusion of the other methods.

Dr. Hunkin, of San Francisco, believed that the failure to secure immobility at the seat of injury was the chief factor in these misfortunes, and said that the members of the profession were afraid to put the splint on tight enough for fear of swelling, and of developing compression symptoms. He said that swelling would not take place, no matter how tight the splint, if the pressure was evenly applied.

Dr. Sharples reported, in concluding the discussion, that he had good results from the use of silver wire. Saving the periosteum was the most important factor in securing good union. When fibrous tissue was found at the ends of the bones it was to be interpreted as an attempt to heal the parts. He thought that the tearing off of the nutrient artery was an important factor, and was sure that he had seen cases of ununited fracture due entirely to that condition.

Site of Origin of Gall-Stones.—Dr. L. L. McArthur, of Chicago, reported an interesting case of gall-stones and showed the liver with the stones *in situ*. He made the observation that for several days after he had operated for all the stones in sight that they continued to come out of the wound through a drainage tube.

Dr. Maurice H. Richardson, of Boston, said that a surgeon need not reproach himself because stones came away subsequent to his operation. Observations were numerous illustrating the formation of stones in the liver instead of in the gall-bladder. In order to avoid this complication he recommended the employment of an incision large enough to admit the surgeon's hand.

Dr. Robert F. Weir, of New York, spoke of his method of securing a sufficiently large incision to enable one to thoroughly explore the liver.

Fractures of the Leg, Their Diagnosis and Treatment, With Report of Cases and Demonstration of X-Ray Pictures.—Dr. C. O. Thienhaus, of Milwaukee, presented a large number of pictures illustrating various varieties of fractures of the leg and of the foot, with his method of treatment and the results obtained.

Dr. Thienhaus said, in closing the discussion, that if a subastragaloid dislocation could not be reduced immediately the open operation should be performed, and if that was not successful the entire astragaloid must be removed.

The Section elected Dr. Robert F. Weir, of New York, Chairman, and Dr. A. C. MacLaren, of St. Paul, as Secretary; Dr. A. F. Jones, of Omaha, was elected as the delegate from the Section to the House of Delegates, and the thanks of the Section to the Rector of the First Presbyterian Church for its use for the meeting and to the retiring chairman and secretary for the excellent program were carried.

SECTION ON PRACTICE OF MEDICINE.

SECOND DAY—JULY 12TH—*Continued.*

(Continued from Page 185.)

Treatment of Nephritis.—Dr. Frederick C. Shattuck, of Boston, said that drugs are absolutely powerless to affect the kidneys. Hence the necessity for treatment without medicine. The kidney in nephritis needs rest more than anything else, but absolute rest is impossible because the rest of the system would not stand it. There must, however, be just as little kidney function demanded as is possible. This limitation of the kidney function must be kept up for as long a time as is possible without injury to the individual. It is rather easy to make mistakes in the application of this rule, and, indeed, for twenty-five years almost universal acceptance of a rigid milk diet for nephritis was a mistake. The other mistaken notion was the encouragement of too much water. Water was considered to be the best diuretic, and caused a flushing out of the system. Unfortunately, however, the water did not always find its way out through the kidney, and consequently there was an increase of blood pressure which made conditions worse than they were before.

Acute Nephritis and Its Treatment.—The most important indication in acute nephritis is to enable the patient to tide over the crisis when kidney elimination is at its lowest. This can best be accomplished in previously healthy persons by absolute starvation for several days. When the kidney symptoms begin to remit, a quart of milk in the day may be allowed, and cereals and fats allowed in moderate amounts.

to keep up the nutrition. There are some curious contradictions as to what is allowed patients. Some authorities absolutely prohibit alcohol, yet encourage the use of koumiss and other preparations of this kind, which contain from five to six per cent. of alcohol. The diet should be increased as the patient grows better, but animal broths should be allowed last of all, because they contain very little nutritious material and a large amount of extractives, which are decidedly irritant for the kidneys.

Acute Exacerbations of Chronic Nephritis.—These must be treated just the same as acute nephritis. Usually, however, owing to the presence of chronic nephritis for some time, the patient is not in as good condition, and consequently the starvation cannot be so absolute nor so prolonged. In all cases, however, there must be a great limitation of diet, and this must be kept up as long as possible consistently with the maintenance of the patient's strength.

Chronic Nephritis with and without Dropsy.—The studies in the pathology of the kidney have been many, yet no classification of kidney disease is entirely satisfactory, hence the necessity for using the clinical distinction in reference to dropsy. Where dropsy is present the heart is usually insufficient, and less water must be given than under other circumstances. Diuretin is an excellent aid in the diagnosis of the origin of dropsy in these cases, and, in Dr. Shattuck's experience, if taken in doses of fifteen to twenty grains three times a day, it never fails to act favorably on cardiac origin, while it has no effect on extra cardiac dropsy.

Individualization of Treatment.—Dr. Shattuck said that the most important thing in the treatment of nephritis is careful individualization. In theory a treatment may be very good, but works very bad in practice in a particular case. "What doth it profit a man if he gains good kidneys and loses his life?" Diet lists in general find their best resting place in the fire. Other organs must always be considered as well as the kidneys. The doctor must be his own prescriber of foods as well as of drugs. Common sense must be his most important guide. Von Noorden has shown that it is an error to give too much water, even in nephritis, where there is no dropsy; it leads to a strain of the left ventricle. In all cases the amount of fluid ingested must be regulated by the amount which is excreted in the urine. As soon as there is any tendency to accumulate, then the fluid taken must be lessened.

Varied Diet.—Dr. Shattuck has for some twelve years rather favored the idea of a varied diet than of too rigid a dietetic regulation. The only thing that can be said in favor of the limitation of red meat is that it limits the total amount of meat taken. After a time, if a man can take only the breast of chicken, this palls on him so much that he eats very little indeed. Dr. Shattuck allows any colored meat once a day, according to the taste of a patient, and fish and eggs at the other two meals. More kidney patients suffer from insufficient food than from too much food, once their nephritis has been discovered and their attention drawn to it. Spices should be forbidden, but all green vegetables and fresh fruits are good in season. The trouble with the treatment of kidney disease is that there has been too much dependence on half-truths. Truth is often said to be a simple matter, but, as Tom Reed said, "Half-truths are simple, but whole truths are the most complex things on God's earth."

Conclusions.—The treatment of nephritis is not by drugs, but by diet. Drugs may be used for symptoms or for the heart, but not for the kidneys. The kidneys must be spared all unnecessary work. Acute nephritis and acute exacerbations, or chronic nephritis, must be treated by starvation to the extent of a patient's strength, and the quantity of food is more important than the quality of the food, and a little alcohol can sometimes be used to decided advantage. A varied diet is better than a rigid dietary, and the amount of albumin is no guide to the diet.

Recuperative Power of Kidney.—Dr. Witherspoon, of Nashville, Tenn., said, in opening the discussion, that the most promising feature of kidney disease is the recuperative power of the kidney. The general teaching is that there is little recuperative power, yet desperate cases get better. Hence the encouragement for treatment. Much of nephritis is of the infectious and circulatory type rather than of degenerative origin. Undoubtedly the clinical condition of the patient is more important than the results of the urinary examination. There is a rush to make the diagnosis of Bright's disease not justified by our present knowledge. Care is needed and many observations. In treatment the danger signals must be watched. Drugs are disappointing, but often helpful in emergencies. A varied diet keeps up the resistive power, and if the patient is not scared to death the outlook is much better than has usually been considered. If medicine be employed the diet may be neglected, yet of the two methods of treatment this is the more important.

Pathological Consideration.—Dr. Ophüls, of San Francisco, said that from the pathological side he has seen cases in which large amounts of albumin with casts were present, yet no lesion of the kidney, even microscopically, could be seen. The only thing present was congestion. This is especially likely to be true in heart cases. On the other hand, there may be acute nephritis without any symptoms in the urine. It is in subacute nephritis that most of the urinary symptoms occur. In any case repeated examinations are necessary if definite information is to be obtained. It seems evident that the eventual classification of kidney diseases will be based not on minute but on gross pathology.

Hope in Nephritis.—Dr. L. D. Bulkeley, of New York, said that he suffered from acute nephritis in 1869, and had for a time very dark-colored urine with large amounts of albumin. His symptoms continued for months, and he had to give up work. He has since had several severe attacks, one of which he had several years ago in the Yellowstone, when his urine became almost coffee-colored and had a large amount of sediment. His only treatment has been milk for a few days and then a gradual resumption of a varied diet. Notwithstanding an apparently bad diagnosis he has continued to enjoy reasonable health and has been able to accomplish a large amount of work.

Proper Use of Milk.—He considers that milk is an extremely important agent in the treatment of nephritis, but it must be taken according to definite directions. It should be taken when the stomach is quite empty, usually about an hour before meals. In Dr. Bulkeley's experience, if taken warm and slightly diluted, it never disagreed. When mixed with other foods it always disagreed with him. Dr. Bulkeley has lived through a fifteen-year term of endowment insurance in the meantime, the elder Dr. Lambert

having accepted him as a risk for that term. He has been refused life insurance by other compahies, but has also been accepted by some. Albumin is present in his urine, but careful attention to his diet for a week removes it and enables him to pass the insurance examination.

Starvation of Nephritis.—Dr. McCaskey, of Indiana, said that he had been struck years ago with the fact that patients suffering from nephritis became emaciated more from limitation of their diet than from their kidney affection. Seven years ago he made a gradual return to the ordinary diet. With regard to meat his rule is that if under a meat diet the excretion of urea goes up, then meat may be allowed. A vital point in the treatment of kidney disease is the management of the gastro-intestinal tract. Kidney disease originally is due to intestinal toxins, and they must as far as possible be eliminated. Even local treatment of the stomach may be of importance in nephritis. Dr. McCaskey considers that the presence of albumin is a stronger indication of degenerative disease than the presence of casts.

Bright's Disease Systemic.—Dr. Woods Hutchinson, of Portland, Ore., said that in no department of medicine is the desecration of ancient shrines more needed for truth's sake than in nephritis. Bright's disease is not a disease of the kidney primarily, but has its origin outside of the kidney. In arterial sclerosis, interstitial nephritis is only a single localization of the arterial condition. Undoubtedly the nephritis is due to a toxemia, usually of mild degree, but producing its irritant effect over long periods. The significance of albumin in casts has been exaggerated. It is not what is found in the urine, but what is not found that is of importance. If the kidney is accomplishing its work of elimination, then all is well. It is not irritant food, such as alcohol and red meats that are to be feared, but the putrefactive processes in the intestines with the resulting poisons made ready for absorption.

Milk as a Food.—Milk is supposed to be an animal food. It is white, as the symbol of purity; hence it is supposed to be an eminently fitting food wherever toxemic processes are to be lessened. As a matter of fact, milk produces a heavier percentage of work for the kidney than almost any other. Most of the milk ordinarily consumed contains more bacteria than sewage. On the other hand, red is the color of sin. Hence, red meats must be harmful, though as a matter of fact they throw less work on the kidney than other forms of food. The greatest care must be exercised in limiting the number of bacteria in the intestinal tract. The intoxication must be diminished and the patient built up.

Tuberculosis of the Kidney.—Dr. Francine, of Philadelphia, said that in many more affections than is usually thought kidney involvement occurs. Dr. Joseph Walsh, of the Phipps Institute, of Philadelphia, has recently shown that in nearly all cases of severe tuberculosis the kidney is affected. In 34 out of 53 kidneys there were tubercles to be found in the kidney substance. Giant cells and caseation were present before this diagnosis was made. In all the other cases, at least cloudy swelling was present. The effort of the kidney to eliminate the toxins and also the bacteria of tuberculosis gives rise to this nephritic condition, which must be considered as one of the elements of severe tuberculosis.

Premonitory Nephritis.—Dr. James J. Walsh, of New York, said that the real triumphs in modern medicine have come from the early recognition of disease and the prevention of further development. In tuberculosis the mortality has been reduced because at the present time the presence of pulmonary tuberculosis is recognized long before it would have even been suspected a few years ago. In fact, many of those now admitted to sanatoria for tuberculosis would be considered as scarcely patients at all. In surgery the early recognition and intervention in appendicitis and gall-stones are producing like beneficial results. If the preliminary stage of nephritis can be recognized and care taken of patients, then a great saving of life will surely be an accomplished fact.

Premonitary Symptoms.—Dr. Walsh considers that in many cases where, because of a history of nephritis in the family, for there is no doubt that a lower resistive vitality of kidney tissues is a common matter of heredity, or where patients have suffered from scarlet fever with subsequent nephritis, or from any other infectious disease with acute kidney involvement, special attention must be paid to certain symptoms that may then be of great significance. The most important of these is heightened blood pressure with accentuation of the second heart sound. This is manifested subjectively to the patient by a fluttering heart and by tendencies to nervous arhythmia of the heart. Nearly always the cause for these will be found in a disturbance of the gastral intestinal tract, and especially tendencies to constipation. Unfortunately people have taken to treating this symptom for themselves with quack remedies of different kinds, and many of the remedies employed are such as to produce an evacuation of the lower bowel, but without any relief of the disturbed conditions within the intestine, which are causative of the constipation. If these premonitory symptoms are persistent in cases that otherwise come under suspicion of nephritis developing, then careful dietetic regulation and insistence on freedom from worrying and intellectual strain may save life for many years by taking the stress off the kidneys.

Kidney Disease as a Systemic Affection.—Dr. Frank Billings, of Chicago, said that the toxic condition which leads to nephritis exists independently of the kidney. Its effects are sometimes seen upon the eye or upon the brain before there are any kidney symptoms. A man may die from apoplexy due to Bright's disease without there having been any serious involvement of the kidney. There may be cardiovascular changes without nephritis. This condition must be treated therefore not by the indications found in the urinary symptoms, but from the clinical observations of the individual's general health.

Diagnosis of Bright's Disease.—Dr. Musser, of Philadelphia, said that the diagnosis of Bright's disease can only be made after repeated examinations of the urine and even then due consideration must be given to other symptoms. The diagnosis of Bright's disease should only be made after the patient has been in bed for some time. This is especially true in cases in which gastro-enteroptosis has been present. With regard to the urine found in autopsy, the significance of any formed elements in it cannot be considered of value, since they are the result of death processes.

Dr. Fussell, of Philadelphia, said that he wished to give a warning note with regard to urinary examinations. At times they are of dubious signifi-

cance, but they certainly prove helpful in a great majority of cases. Examinations of the urine are of importance also in affections of the heart and lungs, because they often supply the danger signal of some coming complication.

Dr. Elroy, of Nashville, Tenn., said that there had been too much confidence in urinary examinations, but they must not be disregarded. That would be a step backward. They are helpful, but their evidence must be taken in connection with other conditions. The impression derived from the present discussion may be too unfavorable to them, and cause the pendulum to swing too far to neglect of them. Classifications of kidney diseases must be made, not on morbid appearances, but on etiology. The difference in the prognosis of kidney cases is undoubtedly due in many cases to the fact that portions of the kidneys sometimes remain healthy after other parts are giving the most serious signs. Nothing is more striking than this variation in the extent of pathological appearances in kidneys when seen at autopsy.

Boiled Meats in Nephritis.—Dr. Elroy has found that boiled meats have none of the objections of roast meats. While the extractives have all been taken up by the water, all the nutritious substance of the meat is left. They are not as tasty as meats otherwise prepared, to many people, but with care any objection to them may be overcome, and then they are valuable adjuncts to the dietary. Dr. Elroy's experience with them has been most satisfactory.

Blood Pressure Increased.—Dr. Lichty, of Pittsburg, Pa., said that in sphygmomanometric absorptions the increase of blood pressure gives the earliest hint of nephritis. Undoubtedly the recognition of the toxic conditions causing the rise of blood pressure might also be possible. In blood pressure studies and bacteriology apparently the future of our knowledge of nephritis belong. Notwithstanding the extensive study of the subject, little has been discovered that is of practical value, but the outlook is encouraging.

Dr. Stengel, in closing the discussion, said that while acute interstitial nephritis is not uncommon, it never becomes inveterate, and develops chronic interstitial nephritis, though this might be expected from the names. Chronic interstitial nephritis is a cardiovascular incident. Unfortunately there are some who in the presence of the classical tripod of urinary symptoms, abundant urine of low specific gravity and some albumin think only of nephritis, and neglect the arterial condition. There can be no danger in truth rightly understood, and while it would be eminently deplorable to cease making routine examinations of the urine, it would be equally deplorable in the present state of our knowledge to continue giving an exaggerated significance to the signs found in the urine without collating them with all the other clinical conditions present in the other organs.

Dr. Brown, of San Francisco, said that with regard to the development of nephritis not only the toxins of the digestive tract must be taken into consideration, but also those of perverted function in other organs, and of disturbed metabolism generally. The thyroid and other ductless glands doubtless play an important rôle in systemic conditions that may lead to nephritis and to simulating affections.

(To be Continued.)

SECTION ON OBSTETRICS AND DISEASES OF WOMEN.

FIRST DAY—JULY 11TH.

Chairman's Address.—Dr. C. L. Bonifield, of Cincinnati, after expressing some well-chosen words of thanks for the honor of being made chairman of the section, spoke of the affairs and welfare of the section during the past, and of the recent progress in gynecology and obstetrics. He spoke first of the desirability of greater permanency in the office of the secretaryship, suggesting a term of not less than five years. In order to render the duties less onerous, papers should be ready for publication when read and abstracts should be furnished promptly. A limit of thirty papers in the section is suggested. Long papers should be read in abstract. As to the scope of the papers to be read before this section, he suggests that it be broadened, and that the title of the section should include Abdominal Surgery.

New Advances.—One of the most widely discussed subjects of the year has been the treatment of retrodisplacements of the uterus. That so many plans have been advocated is proof positive that no ideal method has yet been found. Many retrodisplacements cause no symptoms. When symptoms result a question arises as to the kind of treatment, surgical or otherwise. Many patients are treated surgically that might better be left alone, and vice versa, and the importance of the subject demands that some criterion of differentiation should be understood. Retrodisplacement is essentially due to disproportion of the weight of the uterus and its supports; and to remedy the condition the more normal balance must be secured either by reducing the weight or strengthning the supports. Both are attempted. Hot douches, tampons, rest, purgation in some degree accomplish the former—rest, tonics and surgery the latter. The weight may also be reduced by curettage, trachelorrhaphy, or cervix amputation. The supports may be strengthened by ventrosuspension, by Gilliam's operation, shortening the round ligaments. What cases may be treated non-surgically? In all such the uterus must be freed from adhesions and the appendages healthy and non-adherent, the posterior cul-de-sac deep and the perineum intact, so that tampons and pessaries may be effective. The time limit of treatment must be long. As to surgical methods, their great number is at times confusing. In complicated cases opening of the abdominal cavity is advisable. Here one has free scope and can better appreciate the defects and devise sensible methods of relief. Shortening the round ligaments he now performs as follows: The ligaments are stripped of their peritoneal coverings, and folded once; the folds are then stitched together with chromicized gut, the folded portion pushed through the slit in the peritoneum and the ligament stitched again toward its distal end and the peritoneum closed. He rarely trusts to shortening of the sacro-uterine ligaments.

Another problem of much interest has been cancer of the uterus. He believes that attempts at treatment are justifiable in the early stages. The early and high amputation is, in his mind, a justifiable procedure at times.

Toxemia of Pregnancy.—This subject should be reckoned among those of considerable import, and Dr. Bonifield referred to the practical results that had followed the use of the veratrum viride in treatment. The "limitation of families," or race

suicide, is also a subject that is much in discussion and in urgent need of careful study. He advocates a return to the "simple life."

Innocent Fibromyoma of Uterus.—Dr. Thos. B. Eastman, of Indianapolis, in his paper, after first noting the prevalence of the demand from many sources that all fibromyomata should be removed, on the ground that in many cases complications threatening life may result, states his belief that in a very large proportion of practically all fibroid tumors there exists in the tumor itself at the time of diagnosis, or there will develop in the tumor, other conditions which warrant their removal. Notwithstanding the fact that many undegenerated fibroids are seen at autopsy, the position taken, he believes, is justifiable. He summarized a number of references in recent literature—Camur, Cornil, Haultain, Van Franke, Smith, Fenwick, Emmett, Noble, and others, all of whom report various types of degeneration in fibroid tumors. Extensions of malignant tumors are by no means uncommon. Such instances have been reported by Schraper; extended carcinomata by Bubl, Röhrig, Cullen, Ruge, Veit, and others. Webster's lists were particularly instructive, as also those of Frederick's 788 cases.

Degeneration.—In the writer's own studies 169 cases are recorded. Thirty-one degenerations were found, as follows: necrobiotic 10, sarcomatous 1, suppurative 1, calcareous 2, myxomatous 3, adenocarcinoma 3, telangiectoma 4, cystic 7. The author then spoke of seven cases in which the histories were particularly instructive. In case one a cardiac degeneration seemed to be related to a neglected fibromyoma. A second case died, after delaying and operation, of necrobiotic degeneration. A third fibroma showed similar changes on successful removal, and a fourth, after removal, contained sarcomatous cells. Other histories were of a similar character. In all one common character was present. There was a lack of symptoms pointing to any marked pathological feature other than the tumor, and yet in all, after removal there was abundant evidence not only to justify the operation, but to show that it would have been dangerous to the life of the patient to have been guided solely by the apparent innocence of the fibromyoma. Dr. Eastman was emphatic in stating that the *laisses faire* method, because of the oncoming of the menopause, was very inadvisable.

Etiology and Treatment of So-Called Endometritis.—Dr. E. F. Tucker, of Portland, Ore., had found that in six modern classical text-books on gynecology no less than 27 varieties of endometritis were described, and to further complicate the question the authors were not sufficiently *en rapport* as to acknowledge any one variety throughout. They presented a charming combination salad of classifications founded on etiology, pathology, symptomatology, etc., etc. He expressed the hope that the younger gynecologists might be able to extricate themselves from such a tangle. After considering briefly the histology and the general pathological features of the endometrium, he went on to say that he did not believe that a true endometritis could exist apart from the direct contact of some irritant, microbic or otherwise. The endometrium was naturally involved in general uterine conditions, and one should look to an interference with the general uterine condition to correctly interpret endometrium changes. Dr. Tucker stated his disbelief in a gonorrheal endometritis. An infection of the cervical endometrium he believed in, but the endometrium of the body of the uterus does not become infection. He further expressed the hope that a more rational pathology of endometritis might result from the concerted efforts of pathologists and gynecologists.

Failure After Successful Gynecological Operations.—Dr. W. E. Gould, of Superior, Wis., in this paper defines a successful operation as the execution of a technic according to the intent of the operator and the recovery of the patient from the operative procedure *per se*, and then contrasted this definition with the question of success or failure in giving to the patient relief from the disorder for which the operation was devised. Many operations have been devised and been beautifully carried out. The operation has been a success, but the patient comes back to her physician, or to someone else, an invalid in much the same condition as before. Dr. Gould then spoke of some of the pelvic conditions in which this history was all too prevalent. The most important of these were lacerated perineum, lacerated vagina, tearing in the pelvic floor, particularly an involvement of the puborectal muscle, which muscle should always be examined carefully after parturition. To best repair many of these conditions time is necessary, and while immediate suture after tearing may be at times advisable, he believes that a more careful and useful operation can be done later. Prolapse of the uterus and telescoping of the vagina are not unusual sequelæ of hasty repair, and genereal visceroptosis is a not infrequent accompaniment.

Retrodisplacements.—Uncomplicated retrodisplacements are usually responsible for very few symptoms, and yet at least 50 operations have been devised, and, unfortunately, performed on uncomplicated as well as complicated cases. After a preliminary course in such operative work, Dr. Gould has observed that his patients did not recover, and a more careful study of his case records showed that the pelvic floor was almost always at fault and that a movable non-infected uterus was rarely a cause of symptoms, no matter what its position; but that a fixed, injured, and infected uterus almost invariably would, irrespective of its position, normal or otherwise.

Ovarian Operations.—Conservative operations on the ovaries were another cause for failure after intrapelvic operations. Following infections the condition of the tubes and overies is always serious. If conservation of ovarian tissue is a desideratum it would best be done by a supravaginal amputation of the uterus, and an excision of the Fallopian tubes and accompanying lymphatics, rather than by doing conservative work on the ovaries alone and leaving the uterus.

SECOND DAY—JULY 12TH.

Some Cases of Unusual Type of Extra-uterine Pregnancy.—Dr. J. H. Carstens, of Detroit, Mich., gave a graphic account of two women who were sent to him within a few days of each other, by physicians who had treated them for some time under the impression that they had some inflammation, or had had a miscarriage. Both had temperature and a swelling in the side, and were in a septic condition. In one case a sac containing a four-month fetus with decomposed placenta was found adhering to the left broad ligament. In the other the operation following a diagnosis of abscess in the left broad ligament removed a quart of pus in the abscess cavity and decomposed tissue, which was recognized as placental. Both women made speedy recoveries.

Dr. Carstens expressed his amazement at what some persons could go through, and pressed home the lesson that extrauterine pregnancy is more often met with than is ordinarily expected, and pointed out the fact that the patient often unintentionally throws the doctor off his guard. His conclusion was that extrauterine pregnancy must always be in the physician's mind in cases of sudden onset of pelvic trouble; that the least irregularity of menstruation is suspicious; that inflammation and sepsis following a supposed miscarriage are often due to ruptured ectopic pregnancy, and that operation either by the vaginal or abdominal route is always indicated.

Postoperative Pelvic Exudates.—Dr. W. F. B. Wakefield, of San Francisco, spoke of the frequent occurrence of exudates following operations for pyosalpinx, hydrosalpinx, hematosalpinx, ovarian cystomata, hematomata, abscesses, and neoplasms of the uterus or peri-uterine structures. Always a thinkable condition, its practical importance seems to have been rarely emphasized. Following an observation in which a patient developed a round, orange size, fluctuating tumor, after an operation for pyosalpinx. Dr. Wakefield had studied the condition and has been led to believe that in at least 60 per cent. of the patients on whom pelvic operations are performed postoperative exudations or indurations may be found. These tumefactions are rarely observed while the patient is in bed in the hospital; it is only when a more active life is taken up that they become prominent, and then often cause as much disturbance and distress as the original complaint. He excludes those exudates that result from microbic infection, with its consequent rise in temperature, in pulse rhythm and other septic signs. Literature is almost silent concerning these exudates. The treatment of these conditions consists in local measures of hot douches, depleting tampons, and rest in the recumbent posture—preferably with the hips elevated.

Hernia of the Fallopian Tube—Without the Ovary.—Dr. Frank T. Andrews, of Chicago, makes this the subject of his paper. He reports four cases, two of which occurred in his own practice. He further offered a tabulated study of 353 cases, in which there were 42 with hernia of tube without the ovary; 76 of hernia of tube and ovary; 162 of hernia of ovary without tube; 43 of hernia of non-gravid uterus, and 30 of the pregnant uterus. Hernia of the ovary has been known almost 3,000 years. Dr. Andrews reported in detail the four cases, and had prepared a complete summary of all available reports of similar observations. No differential symptoms were reported, the condition having been found either at operation or autopsy.

Gonorrhea in the Female.—Dr. L. H. Dunning, of Indianapolis, presented a careful and exhaustive paper on this important topic. He considered the question of gonorrhea in the adult woman and its effects on her reproductive organs only. He said that he had been led to believe that the diagnosis was simple, and that the disastrous results of gonorrhea were inevitable. With reference to diagnosis, while it is true that it is easy in the acute stages, it may be extremely difficult in the chronic and subacute cases. The gonococcus becomes sequestered so completely that no refinement of technic can demonstrate its presence. The practical test of the presence of the disease in husband or lover, and the occurrence of an inflammation of the urethra, vulva, vagina or cervix in a healthy woman after intercourse is sufficient to establish a diagnosis. With reference to the topic of sterility Dr. Dunning takes issue with the report of the New York Committee of Fifteen, who state that 50 per cent. of the cases of sterility in the married woman are due to gonorrhea. He has carefully analyzed his statistics of 548 cases. An exhaustive research shows that 10 per cent. of these women were sterile, and of these one in six could he prove the presence of the gonococcus. Twenty-one per cent. of these women had made direct efforts to prevent conception, and other causes were: anteflexion 6, fibroid 11, undeveloped uterus 5, retroversion and retroflexion 4. Thus at least 45 per cent. could be definitely shown to be due to other causes than gonorrhea. In Dr. Dunning's histories 19 per cent. of the women had had only one pregnancy. The most important cause of this he had found was deliberate interference with the process of conception. The next important cause was undeveloped uterus, 27 per cent. of the patients showing this condition.

Concerning the matter of the relation of gonorrhea to pelvic disease, Dr. Dunning further contraverts the opinions expressed by the Association Committee on Prophylaxis of Venereal Disease. In 1904, of 167 operations for pelvic disorders, 27 per cent. only could be ascribed to gonorrhea—not the 80 per cent. of the Association's report. He further reported statistics of the General Hospital and the Bobb's Dispensary, in which he showed that whereas gonorrhea was common enough, and that its sequelæ were disastrous, they were not as bad as some writers would seek to maintain.

Pyosalpinx and a New Operation.—Dr. W. D. Kelly, of St. Paul, discussed the technic of a new operation for this condition, with the report of 59 cases. The author's operation is as follows: Trendelenberg position, bowels pushed back, general walling off of the abdominal cavity. The broad ligament is sought for and the finger is invaginated between the broad ligament and the mass, and the tube partially freed at distal end. The index finger is then forced between the broad ligament and the mass. A cutting needle, half curved with No. 3 pyokatnin is passed between the mass and the broad ligament onto the finger and the broad ligament is tied off. Scissors are used to sever the tissues between the broad ligament and tube. The finger is still further advanced, and an overthrow provisional suture is taken in broad ligament, which usually includes the ovarian artery. The separation of the mass is continued by the farther advancement of finger, application of another provisional suture, and the severing of the mass from the broad ligament with the scissors, a little at a time. Immediately upon dividing tissue, the provisional overthrow suture is tightened, preventing hemorrhage. A provisional Bilroth suture may be put in. The finger is still further advanced toward the uterus and broad ligament severed as before described until the horn of the uterus is reached. The omentum and bands of adhesions are tied off after the uterus is raised, an elliptical incision of tube made, and its removal is accomplished.

Fourth Report on Goldspohn Operation.—Dr. A. Goldspohn, of Chicago, contributes a further study of the results of his operation. During 1902, 1903, 1904, he had operated on 55 patients by his operation. He contends that the artificial ligament operations should be discarded; that the round ligaments are the only available means, and that the bi-inguinal

shortening of the same is the best method, and round ligament suspension the next best. He cited statistics to maintain his position.

Conservation of Normal Anatomy in Gynecology.—Dr. Daniel H. Craig, of Boston, after commenting on the wave of conservatism that has swept over the world in the matter of gynecological operations, being particularly apparent in America, develops the thesis that there is a wide field for such conservative surgery, and would extend the tendency to the fields of uterine displacements and plastic gynecologic surgery. Dr. Craig stands for a greater catholicity in operations. That there are numerous operations for a diseased condition does not argue that an ideal operation is lacking. Empiricism in surgery is to be as warmly condemned as in internal medicine. As the result of a circular letter to twelve American gynecologists, asking for comments on their own operations for uterine displacement, he found that nine found their own operation applicable to nearly all their cases. A few had modified or given up their original procedure. These results tend to confirm Dr. Craig in the opinion that good surgery would exercise a wide individual choice of operation. Dr. Craig's main contention is that a surgical procedure that follows anatomical lines is preferable to one that may accomplish a like result, but is not in accordance with anatomical principles. Thus uterine suspension by means of its natural ligaments is preferable to anchoring it to the abdominal wall.

Repair of Perineum.—Dr. G. B. Somers, of San Francisco, presented an illustrated paper on a developed technic for perineal tears.

(To be Continued.)

SECTION ON NERVOUS AND MENTAL DISEASES.

FIRST DAY—JULY 11TH.

The meeting was called to order at 2.20 P.M. by the Chairman, Dr. J. H. McBride, Pasadena, California.

Chairman's Address.—This was read by Dr. J. H. McBride, of Pasadena, Cal. He urged that every doctor be an investigator in his daily work and stated that more had been accomplished by great physicians and surgeons than by mere experimenters. He felt that in bedside investigation much of the future advances would arise, and expressed the belief that the progress would be more in the line of preventive medicine than a therapeutic nature.

Report of the Committee on Drug Addictions.—This report was read by the Chairman, Dr. Smith Ely Jelliffe, of New York. In this report, which was of a preliminary nature only, the Committee spoke of the need for a systematization of the present knowledge concerning the various drug addictions. By reason, however, of the great number and variety of these habits the Committee had deemed it wise to restrict its suggestions to the field of the use of opium. They made several recommendations and suggested a number of topics for investigation. Among these were (1) the need for a more accurate knowledge of the distribution of the habit. Opportunities for the collection of statistical material were particularly easy of grasping by workers in jails and reformatories. Hospital statistics were of less value. (2) The psychology of the euphoria was suggested as a fruitful topic. (3) The investigation of the vassomotor control and its diseased manifestations offered another field for observation. (4) Still another avenue for research had been suggested by the work of Faust on immunity to morphine. The phenomenon of tolerance to morphine is so marked that it seems not unlikely that there must be some protective mechanism in the body that is made operative. The great dissimilarity in the cerebral structures makes it hazardous to argue from animal experimentation, but the results thus far attained make it worth while to continue the study. (5) The relation of the chemical structure to the physiological action of the allied compounds was suggested as another topic that might profitably be taken up by the members. (6) The causes for symptoms of abstention were suggested as a most fruitful line of research. Little of value has appeared along this line. The Committee was continued for another year.

Defects of Will in Practical Medicine.—This paper was read by Dr. H. T. Pershing, of Denver, Col. He said that voluntary motion is caused by the idea of the motion, which is the memory of sensations previously caused by the motion, and is in a definite kinesthetic center, connected by asociation fibers with the corresponding motor center. He dwelt at length upon the production of the processes of volition, acceleration, inhibition and deliberation and the effect of cortical exhaustion and the emotional states tnereon. He detailed the method of the practical application of these principles in alcoholism, drug habits, sexual errors, neurasthenic defects and hysterical paralysis, and favored the accomplishment of the results by rewards rather than by punishments.

Dr. D. R. Brower of Chicago believed that the majority of the cases began in will disturbances, rather than mental disturbances, and that the failure to discover the inciting factor was one reason for the non-success in treatment. He emphasized the value of morphine in the treatment of these mental conditions, but its use should be without the knowledge of the patient, and properly guarded by other agents to prevent interference with elimination.

Dr. H. A. Tomlinson, of St. Peter's, Minn., stated that the inhibitory centers of the brain existed in the prefrontal region, more particularly the second and third prefrontal convulutions, and that destruction of these would interfere with this function in proportion to the extent thereof, and believed that greatest knowledge in this regard would be obtained by a closer study of the circulation of the brain as it affects elimination.

Dr. G. R. Clark, of Dearborn, Mich., referred to the various forms of dementia præcox, which, while many of them presented different clinical symptoms, from a psychological point of view, showed the same picture, and commented on the value of the previous history and origin of these cases as an aid to treatment.

Dr. J. A. Gilbert, of Portland, stated that the will was a unity and did not believe that it was possible to devise any classification of physiological psychology that is founded strictly upon a material basis.

Dr. Pershing, in closing, stated that he believed many of the perversions of the will were due to the fact that the higher development of the cortical cells had been destroyed and the mind had reverted to its primitive state.

Neurasthoid Conditions—So-Called Neurasthenia.—This paper was read by Dr. Robert Hessler, of Logansport, Ind. In it he outlined in detail the nervous symptoms produced by the inhalation of a contaminated atmosphere, which is most likely to

manifest itself upon the resident of the country coming into one of the cities to live, and in many cases a removal to a pure atmosphere will be a sufficient remedy for the condition. A number of cases were reported in detail illustrative of the position maintained in the paper.

The Localization of the Higher Psychic Functions, Especially with Reference to the Prefrontal Lobe.—Drs. Charles K. Mills and T. H. Weisenberg, of Philadelphia, presented this paper, which was read by the Secretary. The authors divided the cerebral cortex into the following areas of representation (1) sensations and movements; (2) of concrete memories; (3) of abstract concepts and higher psychic functions in general. Detailed evidence from comparative physiology and histology, physiological experiments, clinicopathological records and the study of biological principles was presented and the significance of localization of centers for speech, writing, etc., and the bearing of general on psychic localization considered in detail. The work and views of Hughlings Jackson, Ferrier, Schäfer, Phelps, Wundt and others were reviewed and commented on, and a case of lesion of the prefrontal region occurring in a man seventy-one years of age reported.

Dr. Tomlinson, of St. Peter's, Minn., stated that his personal experience confirmed that of the readers of the paper, and that the symptoms were first noticeable in that portion of the brain which had been the most active.

Dr. William House, of Portland, Ore., reported four cases illustrating the conclusions reached by the writers of the paper. In one the symptoms were due to a bullet, and in three others to foreign growths, one of a sarcomatous, and another believed to be of the carcinomatus variety.

Landry's Paralysis with Report of a Case.—This was read by Dr. Robert McGregor, of Saginaw, Mich. He discussed the influence of toxic agents and septic conditions as causal factors, and the differential diagnosis between this condition and multiple neuritis and acute anterior poliomyelitis. He reported a case occurring in a young man twenty-three years of age with a negative family and personal history, in whom there was complete paralysis of the lower and upper extremities within three days, and which after several months made a good recovery.

Types of Multiple Neuritis.—Dr. David I. Wolfstein, of Cincinnati, considered this condition under (1) toxic cases due to poisons without the body, such as alcohol, mercury, lead and arsenic; (2) similar poisons within the body due to infectious diseases, such as gonorrhea, influenza, puerperal condition, etc., (3) those due to diseased states of the body, such as rheumatism and diaebetes; and (4) cases due to exposure, etc. The author reported a case illustrative of each of these groups.

Dr. H. T. Pershing, of Denver, reported the case of a metallurgist in whom the multiple neuritis was produced by arsenical poisoning. The administration of iodide of potassium markedly increased the pain, which he explained on the theory that it rendered more soluble the arsenic within the body. The man afterward made a good recovery.

Dr. Brower, Chicago, recommended the employment of large doses of quinine with strychnine to keep up the respiratory and circulatory functions in cases of multiple neuritis.

Nervous and Mental Manifestations of Pre-pernicious Anemia.—F. W. Langdon, of Cincinnati, presented this paper, which was read by the Secretary. The author called attention to the fact that a neurologic syndrome, fairly constant, with the following characteristics: (1) General ill health; (2) mental symptoms; (3) sensory disturbances, *a*, subjective, and *b*, objective; (4) Babinski's sign; (5) ataxia of gait and station; (6) diarrhea is present in a large number of cases who subsequently develop pernicious anemia. He cited the necessity for a blood examination in cases of this character, although in many instances the syndrome may precede even the microscopical evidences of the disease in the blood. He stated that the relation of impaired nervous health to blood formation may be important in a practical sense, and cited several cases illustrative of the principles laid down in his paper.

Dr. David I. Wolfstein, of Cincinnati, Ohio, did not favor the classification advanced by the author, and stated that in his experience he had seen no cases which presented such a marked clinical picture, where the condition would not have been evidenced by the blood examination, and expressed the belief that the author had included under this classification many cases that were ordinarily considered as pernicious anemia.

Dr. H. A. Tomlinson, of St. Peter's, Minn., felt that back of these cases of anemia there was an underlying auto-intoxication, which is the causative factor of the anemia and which in turn is produced by faulty elimination, the correction of which will generally remove the anemia, and that as a causative factor in the production of the nervous symptoms, we usually have a previous instability of the individual.

Periodic Paralysis.—Dr. G. E. Holtzapple, of York, Pa., read this communication, which was based upon the personal observations of the author during the past twenty-two years, of a family subject to this condition, covering four generations thereof. Six members of the family have died of this condition, and some of the members who are not subject to the paralytic attacks are the victims of periodic headaches. The paralysis in most cases begins in the lower extremities and may vary in duration from a few hours to three or four days. During the attacks none of the special senses are involved, but there is simply a loss of the power of locomotion. The attacks usually begin about puberty. The author reported in detail the physical condition of the members of the family suffering from these periodic paralyses; those suffering from periodic headaches, and those in whom no symptoms had occurred; also the results of 139 urinalyses, taken from all three classes of the cases, and a striking feature was that the paralytic group showed a marked diminution in the quantity of urea excreted.

Dr. Hilbaum suggested the value of an autopsy in the cases, and the author stated that so far this had been impossible to obtain, but that they had secured the consent of one member of the family now seventy years old to perform a post mortem at his death.

The Tabetic Foot; Its Importance in the Causation of the Ataxia of the Lower Extremities.—Paper by Drs. Sidney I, Schwab and Nathaniel Allison, of St. Louis, was read by Dr. Schwab. The paper was directed principally to the restoration of the gait in locomotor ataxia, and the methods employed and the experiments made were based upon the work done on a series of fifteen cases, extending over a period of about two years. The theories as to the causation of this condition were discussed at considerable length,

as was also the mechanics of the tabetic gait, the tabetic functional flat foot, and the hypotonic ankle joint, together with the importance of these factors in the establishment of the typical gait, with diagrams, photographs and tracings illustrative of these points. The authors then took up the efforts which they had made toward remedying the patient's manner of walking and the position of the foot and ankle. He stated that the pronation of the foot is a factor in all these cases and to its correction by mechanical appliances the physician's effort must be directed. The shoe which is employed by the authors in these cases has the sole so constructed as to counteract this pronation, and an additional assistance has been found to result from putting cleats on the sole. Several cases showing the results of this method of treatment were reported, prominent among which was that of a motorman, whose condition at the time of beginning treatment was such that he could not follow his regular occupation, but by means of the shoe he is now able to go about his customary employment for eight hours a day. The authors do not claim this to be a cure for the locomotor ataxia, but merely a mechanical correction of the gait.

Dr. H. T. Pershing, of Denver, in commenting on the value of the methods advanced by the authors, felt that anything that would enable the patient to walk even moderately well would be of very great service. He referred to the fact that a certain shoemaker was reputed to have made and sold certain shoes at an enormous price for the relief of this condition, and believed that the best results in such cases would be attained by the conjoint work of the neurologist and orthopedist, as was done by the authors of this paper.

Dr. John Punton, of Kansas City, felt that any measure which would enable the physician to relieve the gait of these patients was of great value, and that if the claims made by the authors for this method were substantiated it would certainly be welcomed by the profession as well as by the patient.

Dr. Smith Ely Jelliffe, of New York, referred to the tendency of physicians to tire of chronic nervous cases, such as patients suffering with ataxia, and believed that from this cause alone many of such patients drift into the hands of irregular practitioners. He referred to a shoemaker in New York, who had also been selling shoes at an enormous price for the remedying of this defective gait, and said that if physicians would take as much trouble as Dr. Schwab had done there would be fewer deluded tabetics in the world.

Dr. David I. Wolfstein, of Cincinnati, had also observed shoemakers attempting to correct this condition, as related by the last speaker. He believed that the work of the neurologist must of necessity go hand in hand with that of the orthopedist.

Dr. J. W. Putman, of Buffalo, believed that the greatest advance in the treatment of locomotor ataxia was made by Fraenkel when he introduced the Fraenkel movements, and felt that in conjunction with these movements the mechanical appliances were very valuable, but that without them they would be of little avail.

Dr. Schwab, in closing, stated that the treatment had not been in use a sufficient length of time to give any opinion as to its permanency. He stated that the greatest relief could be afforded to the tabetic patient's mind by correcting his gait, and that very few of them paid any attention to an Argyl-Robertson pupil or absent knee jerk, if the gait was fairly normal. He stated he did not believe this treatment had any effect upon the hypotonicity of the muscles or joints, and that the measure was advanced rather as a means of correcting the mechanical defects of gait than as a therapeutic agent.

Clinical Reports of Some Cases of Hysteria.—This paper was read by Dr. C. C. Hersman, of Pittsburg, who considered the subject under two subdivisions (1) hysterical hyperpyrexia, which is usually found in adult females between the age of eighteen and forty years, although he has observed it in males and in children as young as five years. He stated that he had observed a temperature of 118° F. in two adult females; and in a neurotic child a temperature of between 105° and 106° F. Most of these patients have violent tempers and evince but little desire to control them; and (2) hysteria agitans, which is found mostly in adults, either male or female. Either the extremities or the whole body may be involved and the motion may be either to and fro, rotary or otherwise. The body when in a supine position may perform all kinds of twitching, such as abdominal jerkings, similar to that during hiccoughs, but much more frequent, rapid facial gyrations, rubbing the feet together, falling out of bed, etc. Several illustrative cases were reported, and the author cited as an essential element in the treatment the co-operation of the patient.

Psychopathic Manifestations of the Non-insane Psychoneuroses.—Dr. John Punton, of Kansas City, in his paper said that he felt that psychology should be studied more carefully by the general practitioner than it is at the present time, and particularly by the neurologist. He felt that there were many cases which begin as minor psychoses, which, if they had been recognized in their incipiency, were susceptible of cure, and that they were also extremely susceptible to prevention . He referred particularly to the psychopathic characteristics of the clinical phenomena attending such conditions as neurasthenia, hysteria, dementia præcox, alcoholism, etc. He stated that if one made distinct classification of the neuroses and the psychoses insanity would be found in each group, and that as far as the prognosis was concerned much depended upon the early recognition and treatment. These conditions are often the forerunners of insanity if not corrected before the inhibitory influence is overwhelmed thereby. He suggested the term psychosomato-esthenia to cover many of these conditions.

Dr. H. A. Tomlinson, of St. Peter, Minn., felt that much of the discussion on this subject was mere quibbling over terms and expressed the opinion that a patient must be either sane or insane, although there may be varying degrees of the condition.

Dr. Smith Ely Jelliffe, of New York, thought the term psychoneuroses was much more preferable to denote the minor conditions than the term insanity, as it did not create the same stigma in the minds of the laity, which he felt it was unfair to thrust upon the unfortunate individual and his family. Names were not entities. Diseases themselves were not entities, particularly not those of the mind, and therefore a slavish adherence to descriptive titles was unfortunate. Nosology was a necessary evil, but in psychiatry it had been carried too far and that too much footless discussion was being carried on about words rather than things.

Dr. H. T. Pershing, of Denver, felt that the important questions to be considered were: Is the mind so changed by disease, or is it so imperfectly developed that the individual is unable to attend to the ordinary affairs of life; if it is then he is insane; if not, then he is not.

Dr. J. H. McBride, of Pasadena, Cal., stated that word insanity had a stigmatic and a distasteful significance particularly to the laity, and expressed the belief that there would be a word substituted for this term which would not convey the same idea to the laity, which would no doubt likewise in course of time assume the same meaning, when it would be necessary to substitute another.

SECOND DAY—JULY 12TH.

Public Care of the Insane.—This paper was read by Dr. J. M. Barstow, of Council Bluffs, Iowa. He gave a résumé of the laws of the various States regarding this subject, and believed that any person who was so mentally deranged as to be unable to properly care for himself or his property should be considered a ward of the State, and that when the State assumed the guardianship of such individuals, the property rights thereof should pass to the State subject to reports of the conduct there to be made to the proper tribunals at stated intervals. He felt that the States owed it to the profession and their citizens to provide laboratories and means for the clinical and pathological study of these conditions, and that the interests of the patient, as well as the public at large and the profession would be advanced thereby. He did not feel that the insane hospitals offered a suitable field for the proper investigation and study in these cases.

Dr. G. R. Clark, of Dearborn, Mich., felt that while the pathologist and histologist had been able to observe certain changes by their work in the State laboratories, there was a wide field for the clinician in these cases, referring particularly to the change in the odor from the skin and the change in the vasomotor circulation noted druing the life of these patients.

Psychosis of Morphinism.—Dr. T. D. Crothers, of Hartford, Conn., read this paper. He stated that moral paralysis was the most prominent and constant symptom, appearing in many different forms and degrees, depending on the defects of sense and feeble reasoning. The power to discriminate between true and false and right and wrong is weakened, and there is an intense desire to explain reasons and motives of conduct. The language centers suffer, and the methods of expression vary widely, being sometimes expletive, while in others violent terms, and in still others vague, doubtful terms with double meanings predominate. In a few cases criminal impulse and alternating consciousness, posing in new characters requiring mental skill and cunning, are prominent, egotism being the chief motive and prominent among the cases are swindlers, forgers, etc. Later in the career the mental strength gives away and criminal conduct and motives cannot be concealed; double personality is a mental weakness remaining during life.

Dr. John Punton, of Kansas City, Mo., discussed the subject chiefly from its medicolegal aspect and dealing particularly (1) with the ethical and (2) with the legal side of the question. He raised the question as to whether a physician would, when a patient came to him and admitted that he was a morphine habitué, and the patient was holding a position in which his condition might endanger the lives or property of others, divulge that information, citing the opinion of a leading member of the legal profession that he had no right to do so, which view was concurred in recently by the *British Medical Journal*, while the newspapers of this country took an opposite position.

Dr. G. R. Clark, of Dearborn, Mich., suggested that the acquisition of the morphine habit in epileptic patients would probably oftentimes produce the criminal manifestations and asked if the author has investigated the subject from this direction.

Dr. Crothers, in closing, stated that he had no doubt in many of these cases there was an epileptoid taint, but that why the exhaltation of reasoning along certain lines should be so prominent had not yet been determined. He cited cases illustrative of the criminal propensity, and referred to the difficulty of knowing what disposition to make of such persons when caught, expressing the belief that the appropriate place was in an institution.

Comparison of the Quick and Slow Methods of the Treatment of Morphinism.—Dr. A. J. Pressey, of Cleveland, Ohio, considered all methods in which the drug was undertaken to be withdrawn within five or six days as quick methods and where the period extended over a long time it was denominated the slow method. He stated that hyoscine hydrobromate was being much used for the rapid withdrawal of morphine in many cases, and that while the results have been apparently satisfactory in some cases, experience has shown that the danger is too great to warrant this form of treatment, believing that the patients would regain their health and strength quicker and more surely by the slow treatment, as while the withdrawal was going on, therapeutic measures could also be instituted. He stated that in many instances following the sudden withdrawal the patient's reason was deranged, and although it usually returned in periods varying from a few weeks to some months, it had in some instances been permanently affected. He cited several cases illustrative of the dangers of this rapid mode of procedure.

Dr. T. D. Crothers, of Hartford, Conn., referred to the frequency of the morphine habit among the medical profession, and expressed the belief that there was no drug which was a specific for its relief. He believed that the slow withdrawal was the most successful basis of treatment and urged the necessity for more attention to the subject in the medical colleges.

Dr. Brainard, of Los Angeles, felt that the percentage of physicians addicted to this habit was not quite as large as stated by the last speaker (10 per cent.), and Dr. Pressey, in closing, agreed with Dr. Brainard.

The Psychoses of Heart Disease.—This paper was read by Dr. William House, of Portland, Ore., which consisted chiefly of the clinical histories of 25 cases which had come under his observation in which these conditions were associated. He first classified the cases under two groups (1) slight forms, which did not produce severe mental symptoms; and (2) aggravated forms of organic disease, where the mental infirmites recorded were inferior to the physical. In the severer forms, the treatment must be directed chiefly to the physical condition, while in the milder forms both may be treated coincidentally. Etiologically he divided the condition into four classes: (1) local conditions, such as palpitation, tachycardia,

etc.; (2) local pain, such as angina pectoris; (3) disturbances of the circulation, and (4) secondary lesions of the brain, giving a careful résumé of the symptomatology of each group.

The General Conditions Associated with Insanity; their Correlation and Certain Deductions.—Dr. H. A. Tomlinson, of St. Peter, Minn., read this paper, which was based upon a statistical study of 2,366 cases admitted to the St. Peter's Hospital within the past nine years. The author considered in detail the development of the human mentality from the embryologic state to its full capacity, remarking particularly upon the fact that the higher elements were the last developed, and if there was an arrest of development or defective development from any cause, it was these higher centers that suffered. And also that when the mental system was attacked by degenerative or destructive changes, it was these same highest centers, which were the last constructed, which were the first to be destroyed, and the destruction progressed in the reverse order of the development. Appended to the paper were tables showing the results of numerous analyses of the various secretions of the body, as well as examination of the blood, and the urine and other excretions. He also reported some cases in which the brain of the patient had been observed during life by means of trephined openings, and contrasted the conditions there found with those noted at the autopsy table. He did not favor the classification of Kräpelin, and believed that the therapeutic measures should be directed to the physical factors producing the irritating cause.

Dr. G. R. Clark, of Dearborn, Mich., felt that the classification of Kräpelin was one which was justified from a psychological basis. He believed that in many instances the nervous instability dated not from birth, but from conception, and suggested that possibly, if we are able to obtain a fuller knowledge of the function and pathology of the various glands, some of the problems may be cleared up.

Dr. H. G. Brainard, of Los Angeles, Cal., felt that the basis of insanity was principally two general conditions (1) nervous instability, and (2) stress, and that the question of defective metabolism played a prominent part in the production of the manifestations.

Dr. J. H. McBride, of Pasadena, Cal., referred to the classifications of insanity by Kräpelin and Dercum, and viewed that of the latter as one of the best we have. He suggested that Dercum's classification should be more generally adopted.

Dr. Tomlinson, in closing, stated that his objection to the classification of Kräpelin was that he used metaphysical terms to describe physical conditions, and that any insane patient who was observed from day to day would manifest all the symptoms described by that writer. He felt that such terms as excitement, depression and degeneration could have but one meaning, while there might be varying degrees thereof.

Officers.—The following officers of the Section were elected for the ensuing year: Chairman, Dr. Wharton Sinkler, Philadelphia. Secretary, Dr. David I. Wolfstein, Cincinnati. Executive Committee, Drs. J. H. McBride, Pasadena, Cal.; H. T. Pershing, Denver, Col., and F. W. Langdon, Cincinnati, Ohio. Member of the House of Delegates, Dr. J. H. McBride, Los Angeles, Cal.; Alternate, Dr. David I. Wolfstein, Cincinnati.

(To be Continued.)

BOOK REVIEWS.

A TREATISE ON THE DISEASES OF THE NERVOUS SYSTEM. By L. HARRISON METTLER, A.M., M.D., Associate Professor of Neurology, College of Medicine of the University of Illinois. Cleveland Press, Chicago.

DR. METTLER confines his treatise to the subject-matter of neurology, thus his title needs some limitation. Psychiatry is founded on disease of the nervous system, no one can doubt. But what is in a name?

In his opening paragraph the author states that the "neuron doctrine" is now an accepted fact, but he does not state its limitations, and when he gives us a treatise in "consonance with the theory" he suffers from the weaknesses that too servile an adherence to a theory must inevitably entail.

Dr. Mettler has given us a big book—990 pages—and withal a useful one. A very distinctively personal equation shows itself throughout the volume and adds to its interest. Here is no stenographically dictated text-book from the latest German monograph, but a work bristling with the author's own observations, good and bad; logic and personalities.

His chapter on hysteria is certainly one of the best we have seen in any English text-book. He adopts the essential psychotic nature of hysteria, following the French authors closely, and is consistent in his advocacy of psychoptheraphy as the most rational type of treatment. The characterization of hypnotism, itself a hysterically induced condition, as an unsafe mode of treatment commends itself highly. The psychoneuroses throughout are illuminatingly handled and in accord with the best modern doctrines.

The author seems to have gone astray on his neuronic doctrines in separating acute anterior poliomyelitis and its closely related chronic stage of progressive muscular atrophy. It is difficult to see wherein the terminal motor neuron is not involved in both instances. Perhaps the character of the pathological process is different, but that does not interfere with the anatomical involvement.

Too much anatomy of the brain mars the second portion of the author's book. It is, we believe, better to leave the normal structures to text-books of anatomy. Otherwise the padding becomes too obvious. The anatomy might be given in outline in connection with a disease process, but *chacun à son goûte* is as indisputable in book writing as in any other intellectual pursuit.

The book as a whole is a forceful and useful volume. There are some abdominal illustrations in it, filling up many plate pages. We hope that they can be eleminated from a second edition, as they tend to impart a cheap and amateurish look to a really admirable text-book.

THE AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY FOR 1905. Volume—General Medicine. Edited by GEORGE M. GOULD, A.M., M.D. W. B. Saunders & Company, New York, Philadelphia and London.

THE American Year Book of Medicine for 1905 is a worthy addition to the already long list of editorial achievements of Dr. Gould. Having associated with him contributors of ability and authority, he has found it possible to glean from the mass of current medical literature all that is of real value and stands for scientific advancement, and consequently has been able to present to the profession a volume of the year's progress in concise form with authoritative comments.

This issue fully maintains the high standard set by the former editions and is a valuable book for those who desire a compendium of the year's work in digested form.

Pictorially it is not elaborate, though satisfactory.